FURTHER EVALUATION OF THE EFFECT OF A NO-KILL REGULATION AND A LARGE TROUT HARVEST REGULATION ON ANGLER EFFORT, CATCH, AND HARVEST OF BROWN TROUT *(SALMO TRUTTA)* ON OATKA CREEK

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ABSTRACT

Oatka Creek is a high quality western New York trout stream. Fisheries resources in certain areas within the stream are managed by stocking hatchery raised yearling and two-year-old brown trout (*Salmo trutta*). Another section of the stream is managed for wild, naturally produced brown trout with restrictive harvest regulations. The trout fishing regulations in a portion of the wild area were changed from a high size and low creel limit to a no kill regulation on October 1, 2000. The trout fishing regulation in the stocked area was changed on October 1, 2002 from a five fish of any size creel limit to a regulation that limits the number of large trout that can be harvested (5 per day any size with no more than 2 larger than 12 inches, known as the "5/2" regulation). Creel censuses were conducted prior to (2000), immediately after (2001) and three years after (2004), the regulation changes. The 2000 and 2001 surveys found that immediately after implementing a no kill regulation, total angler effort, total catch, and total harvest in both survey areas (wild and stocked) increased in similar proportions among management types and months. Catch rates remained the same between the two years among management types and months, and harvest rates in the stocked areas were the same. As expected, harvest rates in the wild area immediately dropped from a low rate to nearly zero, but the near zero harvest rate unexpectedly did not persist in 2004. In 2004, effort in the wild area was higher than 2000. It is not likely that the implementation of the no kill regulation alone induced higher fishing pressure in the wild area, since effort was higher in both the stocked and wild areas in 2001 compared to both 2000 and 2004. Favorable air temperature and stream flow conditions were probably the reason why higher angler effort occurred in 2001, immediately after the no kill regulation change, because 2000 and 2004 had similar unfavorable weather and stream flow conditions. The 2000 and 2001 surveys also determined that under the right weather and flow conditions, anglers targeting the larger stocked two-year-old brown trout were very successful at catching and creeling these fish immediately after they were stocked. Stocked area effort, catch, and harvest in 2004 were the lowest of the three survey years. The 2004 catch and harvest of large (>12"TL) brown trout from the stocked area were also the lowest of the three years surveyed. In 2004, the wild area catch and catch rates of large brown trout were the same as 2000 and 2001. The implementation of the no kill regulation did not induce an increase in the catch rate of, or the number of anglers catching, large brown trout in the wild area. Reduced angler effort, catch, and harvest rates of large brown trout may have been the result of the implementation of the "5/2" regulation, but the implementation of the "5/2" regulation does not appear to have appreciably spread the harvest of large brown trout among more anglers over a longer period of time in the stocked area as well as unannounced stocking did.

INTRODUCTION

Oatka Creek is well-known as a high quality stocked and wild brown trout (*Salmo trutta*) fishery of regional significance. The trout portion of Oatka Creek in NYSDEC Region 8 is approximately 13.5 miles long, beginning near the Village of Scottsville, Monroe County and ending at Circular Hill Road in the Town of Leroy, Genesee County. Public Fishing Rights (PFR) have been obtained on 2.5 miles and an additional 1.7 miles are accessible from Oatka Creek Park, a county park (Figure 1). Since the park was acquired by Monroe County in 1968, special regulations (All year open season, 12 inch minimum size, three fish per day limit, artificial lures only) have been in place on the 1.7 stream miles within the park to enhance a naturally reproducing population and provide year round angling opportunity. Biological surveys were conducted from 1968-1973 to assess the impact of the special regulations on the wild trout fishery in this section of Oatka Creek (Abraham 1976). Densities of age 1+ and 2+ brown trout displayed an immediate positive response to the protective regulations as were shown by the 1969 and 1970 surveys. Growth rates for these age classes exhibited a corresponding decrease over the study period. Standing crops of age 3+ and older fish remained relatively constant, appearing to be a function of suitable shelter for larger trout. In 1978, the special regulation area (SRA) was expanded to a 5-mile section of the stream, including all of the Oatka Creek Park area, from Bowerman Road upstream to Twin Bridges Road (Figure 1). The SRA comprised 37% of the trout waters, and 37% of the PFR.

Since Oatka Creek is in very close proximity to Seth Greene's original hatchery, the first established in the United States, Oatka Creek has been stocked since at least the late 1800's. Lane (1987) evaluated the brown trout population and stream habitat characteristics outside the SRA to develop revised stocking recommendations. Utilizing the Catch Rate Oriented Trout Stocking (CROTS) policy (Engstrom-Heg 1990) and modified for the use of two-year-old trout stocking, an upper 2.3 mile section of Oatka Creek in Genesee County, above the SRA, and a lower 1.0 mile section in Monroe County below the SRA are stocked. The upper section is stocked with 2,500 yearling and 700 two-year-old brown trout in late March or early April. Later stockings of 1,300 yearling and 700 two-year-old brown trout are stocked in late April to early May and 2,200 yearlings are stocked in late May to early June. The lower section is stocked with 1,300 yearling and 350 two-year-old brown trout in late March or early April. Later stockings of 600 yearling and 350 two-year-old brown trout are stocked in late April to early May and 1,200 yearlings are stocked in late May to early June. Prior to October 1, 2002, five trout per day of any size were permitted to be kept all year in the portion of Oatka Creek outside the SRA.

Rochester and Buffalo Area trout fishermen want the opportunity to catch more larger wild fish and had requested a no kill section on Oatka Creek for many years. In this instance, the goal of a no kill regulation is to produce a quality trout fishing experience for large, naturally-reproducing brown trout. The 1.7 mile section of the stream within Oatka Creek Park was changed to a no-kill regulation on October 1, 2000. New regulations on the balance of the 3.3 miles in the SRA were implemented on October 1, 2002. From April 1 to October 15, two trout greater than 12 inches my be kept. From October 16 to March 31, a no-kill, artificial lures only

regulation is in effect.

To assess whether the goals of the no kill regulation have been met, baseline biological surveys, replicating those done between 1968 and 1973, were conducted in the early fall of 1998, 1999, and 2000. Post-regulation change surveys were conducted in the fall of 2001, 2002, and 2003 (Sanderson, in preparation).

A creel census in the 1.7 mile section within Oatka Creek Park was conducted in 1970, just after the special regulations went into effect (Abraham 1972, 1976). That survey was conducted to assess angler use and harvest after the imposition of the special regulations. The census revealed that the special regulations were well accepted and fishing pressure was heavy (533 trips per acre). The catch rate was 0.41 fish per hour. The creel rate was typically low (0.08 fish per hour) which implies that taking fish home was not a prime motive for fishing this section of Oatka Creek. The local Trout Unlimited (TU) Chapter, in cooperation with the Region 8 Fisheries Unit, conducted a diary program in 1972 and 1973. In 1972, 11 diary keepers fished 81 days (358 hrs) and caught 316 trout in the Oatka Creek Park section of the stream (0.88 trout/hr). All but six were released. In 1973, 9 diary keepers fished 74 days (233 hrs) and caught 251 trout in the Oatka Creek Park section of the stream (1.08 trout/hr). All but one were released.

Special regulations waters tend to attract anglers seeking fishing related outdoor recreation where taking fish home is not a primary objective (Ball 1971, Hunt 1964, 1981, 1991; Kerr 1982; Nehring 1987; Rohrer 1983, Thorn 1990). Barnhart and Engstrom-Heg (1984) and Thorn (1990) found that initial reductions in angler use upon application of special regulations are common and are followed by long term increases in angler use. Evans (1994) documented a reduction in fishing pressure following the implementation of a no-kill regulation on the Genesee River. He also found high angler approval for the regulation and expected effort to increase as the no-kill area became more popular. A concern among the local trout fishermen is that a new no-kill regulation may immediately trigger an increased interest among anglers to fish in an area now designated as management for a “quality fishing experience.” Such interest could cause a rapid increase in fishing pressure and crowded conditions. To evaluate this concern, a recreational fishery survey (“a creel census”) was conducted from March to October 2000, prior to the imposition of the new regulation. The survey was replicated the following year, March to October 2001 (Sanderson 2003). Long term follow-up monitoring was recommended by Thorn (1990). To further evaluate the long-term effects of the no-kill regulation on the trout fishery, another creel census was conducted from March to October 2004 to see how use stabilized after the regulation had been in place for three years.

An interesting finding of the 2000 and 2001 creel surveys concerns the fate of stocked two year old brown trout. Under the right weather and flow conditions, anglers targeting the larger stocked two-year-old brown trout are very successful at catching and creeling these fish immediately after they are stocked. Within a week of stocking, all of the stocked two-year-old brown trout were creeled in 2000, and a little more than half were harvested in 2001 (Sanderson

2003). To spread the harvest of stocked two year old brown trout among more anglers over a longer period of time, on October 1, 2002, the trout regulation outside the SRA was changed to permit 5 trout per day of any size to be kept, with no more than two allowed to be larger than 12 inches (known as the "5/2" regulation). The 2004 creel survey was also used to evaluate whether the "5/2" regulation was successful at achieving it's objective.

OBJECTIVES

1. Determine angler effort, catch, and harvest during the peak fishing season of this year round trout fishery.

2. Compare angler use before (2000 creel census), immediately after (2001 creel census), and three years after (2004 creel census) the imposition of the no kill regulation.

3. Compare angler use, catch, and harvest between the special regulations/no kill and "5/2" sections before (2000) and after the imposition of the no kill (2001) and "5/2" (2004) regulations.

4. Determine if the "5/2" regulation achieves it's objective of spreading the harvest of stocked two year old brown trout among more anglers over a longer period of time.

5. Determine the success or failure of the no kill regulation in achieving its objectives of:
    a. Increasing the angler catch rate of wild brown trout greater than 14 inches within the no kill area by 25 percent.
    b. Increasing the number of wild brown trout that are greater than 14 inches, estimated from electrofishing surveys, from 21 per mile to 26 per mile within the no kill area (25%).
    c. Maintaining an acceptable catch rate of 0.5 trout per hour.
    d. Encouraging intensive fishing pressure of at least 750 hours per acre annually between April and September.
    e. Maintaining a self-sustaining natural brown trout population.

METHODOLOGY

Between March 27, 2004 and October 23, 2004, a recreational fishing survey was conducted to compare angler use, catch and harvest during the 7-month heavy use period three years after the imposition of the no-kill and "5/2" regulations.

An equal number of weekend and holiday days (including the traditional opening day of trout fishing season: April 1, 2004), and weekday days were censussed. Between April 1 and June 30, the survey was conducted on a total of 52 days: 26 weekend/holiday days and 26 weekday days (two weekend days and two weekdays per week). Between July 1 and October 30, the survey

was conducted on a total of 37 days: 17 weekend/holiday days and 20 weekday days (one weekend day and one weekday per week). All survey dates were randomly chosen except that the day before, day of, and day after stockings were surveyed. The late March dates in 2004 were the day of, and the day after the first stocking increment, and were the only dates in March that were surveyed.

The survey consisted of two parts: angler/car counts and angler interviews. The survey day was divided into morning and afternoon periods. An equal number of each period were surveyed. Morning surveys began at dawn and ended at 1300. Afternoon surveys began at 1300 and ended at dusk. The survey periods were divided into two count intervals of equal length: From dawn (varied from 0500 to 0700) to mid way through the period (varied from 0800 to 0930) for morning surveys and from 1300 to mid way through the period (varied from 1600 to 1730) for afternoon surveys. The roving-roving survey design as described in Chapters 11 and 15 of Pollock, et al. (1994) was used.

Angler and Car Counts: The study area was divided into ten numbered areas consisting of Fisherman Parking Areas (FPA) and known access points. A random numbers generator determined where the clerk began and in which direction he traveled. Anglers and cars parked alongside roads parallel or crossing the stream or at FPAs were counted at the beginning of each interval. The counting route took approximately one hour to complete.

Angler Interviews: During the interval between counts, the clerk re-traversed his course and intercepted as many anglers as possible. The anglers were interviewed, with care taken to spread interviews among the numbered areas. The intent was to maximize the number of interviews, whether they came from complete or incomplete trips. The date, time, and area were recorded. Anglers were asked if they were done fishing for the day, what time they began fishing, how many trout were caught, how many kept, how many anglers were in their vehicle, what fishing method was used, what Town/County they were from, and general comments regarding the fishery. The creel survey agent also measured the air and water temperatures at 1300 hours, and observed and recorded the general weather conditions on the day of the survey.

During counts and interviews, data were entered directly into a Pocket Access database using an HP iPac 4100 Pocket PC. Data were downloaded onto a desktop PC into an Access database, and was tabulated by month and weekend/weekday day. The numbered areas were separated into named areas depending on the fisheries management employed (Figure 1). Sites 1, 5B, 6, and 7 are located in the areas that are stocked, and were labeled “stocked.” Sites 2, 3A, 3B, 4A, 4B, and 5A are located in the special regulations area (SRA) (including the post-10/1/2000 no-kill area) and were labeled “wild.” Results were further stratified by these named management areas. Monthly effort, catch, and harvest were calculated using an Excel spreadsheet in accordance with procedures outlined in Pollock, et al. (1994) for a roving-roving survey. Since about 70 % of the roving interviews in 2004 recorded incomplete trips, the average of the individual catch rates for each angler for each day was used for all calculations, and all short trips (less than 0.5 hr) were ignored to eliminate potential bias from short trips (Carlander, et al. 1958 as cited in Pollack, et al. 1994).

RESULTS

Effort

During the 2004 census, 1,533 anglers were interviewed. They fished 3,163 hours, with a mean trip length of 2.07 hours. Fishing effort in all areas of Oatka Creek in 2004 was estimated to be 24,048 (standard error=2,231) angler hours. Estimated fishing pressures in total hours by month and management type for all three years are given in Tables 1 and 2 and illustrated in Figures 2-7. Although total effort was 29 percent higher in 2001, 2004 effort was proportionally similar by month and management area to the 2000 estimated effort. The lone exception to this pattern was that in 2004, the greatest angler effort was expended in May, which was different from 2000 and 2001, when April had the highest effort. When comparing 2000 with 2004, which had similar water years, effort in the wild area increased by 40%, while effort in the stocked area decreased by 8%. Other similarities exist between the years. Although the 2004 effort was lower than in 2000 and 2001, the traditional opening day of trout fishing season (April 1) generated the highest daily fishing pressure estimate of all years (756 hours in 2004, 1,106 angler hours in 2001, and 1,344 angler hours in 2000). This day accounted for 3% of the total effort in 2004, 3% of the total effort in 2001, and 6% of the total effort in 2000. The day of the first stocking increment in March produced relatively high daily fishing pressure estimates: 455, 651, and 707 angler hours in 2004, 2001, and 2000, respectively. All stocking days in all years generated high estimates of angler effort.

With the exception of May 2004 and June 2001, angler hours and angler hours per acre followed similar patterns among the years. Proportionally more people fished Oatka Creek in June 2001 (Figure 2). Monthly fishing pressure density expressed in angler hours per acre during the 2004 census period ranged from 8.10 in the stocked areas in October to 253 in the wild area in May. The highest density of fishing pressure was concentrated in the wild area. From April through September 2004, fishing pressure density was 465 angler hours per acre in the stocked areas and 956 angler hours per acre in the wild area, for a total of 600 angler hours per acre. For the same time period in 2001, fishing pressure density was 726 angler hours per acre in the stocked areas and 1,171 angler hours per acre in the wild area, for a total of 848 angler hours per acre. From April through September 2000, fishing pressure density was 506 angler hours per acre in the stocked areas and 707 angler hours per acre in the wild area, for a total of 562 angler hours per acre. The proportion of wild area fishing effort increased from 34% in 2000 to 44% in 2004.

Catch and Catch Rates

Anglers interviewed in 2004 caught 3,434 brown trout for a catch rate of 1.14 fish per hour. Estimated catch and catch rates by month and management type for all three years are given in Tables 3 and 4 and illustrated in Figures 8-13. In 2004, anglers caught an estimated 25,045 (standard error=2,364) brown trout from all areas of Oatka Creek. Nearly two thirds of the catch

came from the stocked areas. The peak catch occurred in May in both the stocked and wild areas. By comparison, in 2000, anglers caught an estimated 23,164 (standard error=3,930) brown trout from all areas of Oatka Creek. Nearly three quarters of the catch came from the stocked areas. The peak 2000 catch occurred in May in the stocked areas, while in the wild area, peak catch occurred in April. The brown trout catch was considerably higher in 2001. An estimated 36,022 (standard error=3,028) fish were caught from all areas of the Oatka. Similar to 2000, nearly three quarters of the catch came from the stocked areas in 2001. In 2001, the peak catch occurred in June in the stocked areas, and peak catch in the wild area came in May. No surplus trout were stocked in 2000 or 2001. In 2004, approximately 680 surplus yearlings and 250 surplus 2 year old brown trout were stocked. Since the 2004 stocked area catch was the lowest of the three years, it doesn't appear that the 2004 surplus stocking resulted in a higher catch estimate. Catch estimates followed the same pattern all three years, with the exception of the 2001 June, and particularly the 2001 May wild area estimates. However, when comparing the effort estimates in Figures 3 and 4 and the catch rates in Figures 12 and 13, it is apparent that the higher catch in May and June 2001 is a function of higher 2001 fishing pressure.

The highest estimated catch rate was observed during the three days in March of 2000 that were censussed. An astounding 6.15 brown trout per hour was estimated for the wild section and an impressive 4.12 fish per hour was estimated for the stocked section. Analysis of the raw data reveals that one local angler interviewed in the wild area fished for an hour and caught 12 trout, which accounts for this catch rate. The high March 2000 catch rate in the stocked area is a result of favorable fishing conditions (bright sunny day, low water) on the day of the first stocking increment. Less favorable fishing conditions in March 2004 and 2001 generated still impressive catch rates of 1.60 and 1.91 trout per hour respectively, in the stocked area for the two days that were censussed. Other than the differences in the March catch rates, the monthly pattern of catch rates was similar between years and management areas. The August 2001 catch rate in the stocked areas was noticeably higher than the August 2004 and 2000 rates.

In 2004, three years after the no-kill regulation went into effect, an estimated 447 brown trout over 14 inches in total length were caught from the wild area, the 1.7 miles within Oatka Creek Park (Sites 2, 3A, 3B, 4A, 4B, 5A) (Table 8). This represents 5.0% of the total estimated no-kill area catch and a catch rate of 0.04 brown trout greater than 14 inches per hour fished in the no-kill area. In 2001, the year that the new no-kill regulation went into effect, an estimated 1,290 trout greater than 14 inches were caught by anglers fishing in the same area. This represents 14.0% of the total estimated no-kill area catch and a catch rate of 0.10 brown trout over 14 inches per hour fished in the no-kill area. In 2000, an estimated 369 brown trout over 14 inches were caught from the proposed no-kill area. This represents 6.0% of the total estimated proposed no-kill area catch and a catch rate of 0.05 brown trout greater than 14 inches per hour fished in the proposed no-kill area.

In 2004, an estimated 3,214 brown trout over 12 inches in total length were caught in the stocked area (Sites 1, 5B, 6, and 7) with a catch rate of 0.24 brown trout greater than 12 inches per hour fished in the stocked area (Table 8 and Figure 20). In 2001, an estimated 6,972 brown trout over

12 inches in total length were caught in the stocked area with a catch rate of 0.33 brown trout greater than 12 inches per hour fished in the stocked area. In 2000, an estimated 4,641 brown trout over 12 inches in total length were caught in the stocked area with a catch rate of 0.32 brown trout greater than 12 inches per hour fished in the stocked area.

Harvest and Harvest Rates

Anglers interviewed during the 2004 census creeled 438 brown trout for a harvest rate of 0.16 fish per hour. Estimated harvest and harvest rates by month and management type for all years are given in Tables 5 and 6 and illustrated in Figures 14-19. In 2004, anglers creeled an estimated 2,906 (standard error = 356) trout from all areas of Oatka Creek. Since a total of 12,630 brown trout were stocked in 2004 and there are wild and holdover trout in the stocked sections, this estimate appears to be realistic. Like in 2001 and 2000, the peak estimated harvest of 2004 occurred in May in the stocked areas (1,037 fish). Fewer fish (287) were harvested from the stocked areas during the two days in March 2004 that were censussed than in other years. After peaking in May, the harvest declined substantially through the rest of the season. The total brown trout harvest was much higher in 2001, where an estimated 6,254 fish were kept from all areas of the Oatka. This estimate also appears to be realistic, since in 2001, 11,150 brown trout were stocked. The peak harvest appeared to be spread out more within the April to June period in 2001 compared to 2004 and 2000. In 2000, anglers creeled an estimated 5,196 trout from all areas of Oatka Creek. Since a total of 10,750 brown trout were stocked in 2000, this estimate appears to be realistic, as well. About 100 fewer fish were harvested from the stocked areas during the three days in March 2000 that were censussed (1,416) than all of May 2000. This was due to a high creel rate of stocked trout on the day of and after stocking. An unexpected increase in harvest from the wild area, especially considering the existence of the no-kill regulation for three years, occurred in 2004 (125 versus 13 in 2001 and 61 in 2000).

The highest estimated harvest rates were observed on the days censussed in March of all years. The March 2004 stocked section harvest rate of 0.44 brown trout per hour is one quarter of the 1.71 brown trout per hour that was estimated for the stocked section in March 2000. The high 2000 creel rate is a result of favorable fishing conditions (bright sunny day, low water) on the day of the first stocking increment. Although the day of the first stocking increment in 2004 was warm, high water conditions existed in the Oatka. Much less favorable fishing conditions in March 2001 generated a more moderate creel rate of 0.63 trout per hour. Other than the differences in the March harvest rates, the monthly pattern of harvest rates was similar between years and management areas. The August 2001 harvest rates in the stocked area was noticeably higher than the August 2004 and 2000 rates. The overall wild area creel rate in 2004 (three years after establishment of the no kill regulation) was the same as 2000 (before the no kill regulation went into effect). However, in both years it was very low (0.01 fish per hour), and was very close to zero in 2001.

In 2004, an estimated 1,154 brown trout over 12 inches in total length were creeled from the stocked area (Sites 1, 5B, 6, 7) two years after the “5/2“ regulation went into effect (Table 9 and

Figure 21). This represents 41.4% of the total estimated stocked area harvest and a harvest rate of 0.09 brown trout greater than 12 inches per hour fished in the stocked area. In 2001, an estimated 2,894 trout greater than 12 inches were creeled by anglers fishing in the same area, a year prior to the "5/2" regulation going into effect. This represents 46.2% of the total estimated stocked area harvest and a harvest rate of 0.14 brown trout over 12 inches per hour fished in the stocked area. In 2000, an estimated 2,452 brown trout over 12 inches were caught from the stocked area. This represents 47.7% of the total estimated stocked area harvest and a harvest rate of 0.17 brown trout greater than 12 inches per hour fished in the stocked area. A trend towards higher release rates of large brown trout was observed, as the portion of brown trout greater than 12 inches total length caught that were creeled declined from 53% in 2000 to 42% in 2001 to just 35% in 2004.

Air and Water Temperatures

The March 2001 mean air and water temperatures recorded at the stream were lower than March 2004 and 2000. For the rest of the survey period, mean monthly air and water temperatures were higher in 2001 (Figures 22 and 23). Mean air and water temperatures in 2004 most closely resembled 2000.

DISCUSSION

Survey method

Since most of the stream sections on the Oatka that are accessible to the public are near roads, bridges, or within Oatka Creek Park, and anglers are visible for counting, direct counts of anglers were made in 2004 as they were in 2001 and 2000. The angler count route usually took less than an hour to complete, so it is considered instantaneous (Pollock, et. al 1994). A potential bias toward a low estimate exists since unseen anglers would not be counted. However, this bias is thought to be minimal. As an assurance, cars were also counted, but the effort estimates derived from angler counts appear to be accurate. Another bias toward undercounting anglers exists because there are areas of Oatka Creek that are privately owned and do not have public access. Other than those that could be seen from the road or bridges, the anglers fishing these privately held areas could not be counted. A private fishing club owns or leases the un-stocked, approximately two mile section immediately downstream of Oatka Creek Park. Discussions with members of the fishing club indicate that club rules limit the number of people that can fish in that section on any given day. Thus, angler use in this area is thought to be light. The club rules also prohibit creeling trout, therefore, harvest in this area is assumed to be zero.

Influence of the No Kill Regulation and Comparisons Between Management Areas

Effort

Anglers continue to fish the Oatka heavily. In all areas, 600, 848, and 562 angler hours per acre

were estimated in April-September 2004, 2001, and 2000, respectively. The objective of encouraging intensive fishing pressure in the wild area of 750 angler hours per acre between April and September has been exceeded, with 956, 1,171, and 707 angler hours per acre estimated in the wild area in 2004, 2001 and 2000, respectively. The creel survey data shows that three years after implementation of the no kill regulation, the 2004 estimated fishing effort in all areas was 29 percent lower than in 2001, but 8% higher than in 2000. Comparatively, estimated fishing effort in all areas of Oatka Creek in 2001 was 51 percent higher than in 2000, the year after the imposition of the no kill regulation.

Sanderson (2003) concluded that the imposition of the no kill regulation did not induce an immediate higher fishing pressure on Oatka Creek because the observed increase in effort was not specific to the wild area where the regulation was in effect, and also because catch and harvest rates remained the same between years and management areas (with the notable exception of the elimination of harvest from the wild area). Climatic and stream flow conditions provided a better explanation for the increase in fishing effort between 2000 and 2001 (Sanderson 2003). With the exception of March, mean monthly air and water temperatures were higher in 2001 than 2000, particularly in the later months of the survey. The spring and summer of 2000 was considered to be cooler and wetter than average, while the spring and summer of 2001 was characterized as being warmer and drier than average (NWS 2001, 2002). Daily mean discharges from April to October 2000 were above the daily median for the period of record and daily mean discharges from April to October 2001 were below the daily median for the period of record (Hornlein, et al 2001, 2002).

Climate and stream flow conditions in 2004 most resembled that of 2000 (Figures 22 - 26). Like 2000, the last week of March was mild, while the rest of the spring and summer were considered to be cooler and wetter than average (NWS 2004, 2001). The remnants of Hurricane Frances brought heavy rains in early September that caused Oatka Creek to rise above flood stage. Daily mean discharges from April to October 2004 and from April to October 2000 were above the daily median for the period of record (Figures 24 and 26 and Tables 10 and 12, from Hornlein, et al. 2004, 2001). Cool air temperature and high stream flow are considered by trout anglers to be less than ideal trout fishing conditions. Less than ideal conditions caused anglers not to fish frequently in 2004 and 2000. The relatively warm air temperatures and low flow conditions of 2001 contributed to higher fishing pressure, because fishing success can be higher under these conditions.

When stocked area and wild area effort are examined, the 2004 estimated stocked area effort was 8% less than 2000 and 36% lower than 2001, while the 2004 estimated wild area effort was 40% higher than 2000 and only 15% lower than 2001 (Table 7). Proportionally more angler hours were expended in the wild area three years after the imposition of the no kill regulation. It appears that restrictive harvest regulations may have influenced angler effort in Oatka Creek in addition to climate and stream flow conditions. The imposition of the no-kill regulation may have caused more trout fishermen to seek this type of fishing experience in the wild area. The imposition of the restrictive “5/2“ regulation may have caused fewer anglers seeking to creel

trout to fish in the stocked areas, presumably because they could keep fewer large trout.

Catch, Catch Rates

In 2004, the estimates of brown trout catch in all areas were slightly higher (8%) than 2000, but 29 percent lower than 2001. The 2004 stocked area estimated catch was 6 percent lower than 2000, and 40% lower than 2001. However, the 2004 wild area estimated catch was 47% higher than 2000, but only 3 percent lower than 2001 (Table 7). While the catch from all areas was similar between 2000 and 2004, proportionally more brown trout were caught from the wild area in 2004 than 2000. The 2004 estimated catch rate in the wild area was 5 and 15 percent higher than 2000 and 2001, as well.

Since catch rates remained relatively similar between the years and management areas, the high 2001 catch estimates can be explained by the high 2001 effort. The CROTS trout management manual specifies that the goal for high quality trout streams is to provide an average catch rate of at least 0.5 fish/hr for each month of the season (Engstrom-Heg 1990). This objective has been exceeded, with outstanding catch rates in both the stocked and wild areas. In the stocked area, this is due to what now seems to be a higher stocking rate than needed to meet statewide objectives. High release rates likely play a role in producing these excellent catch rates.

An estimated catch rate of 0.063 brown trout greater than 14 inches from the wild area would be expected from a 25 percent increase over the pre- no kill regulation 2000 level. In 2001, the estimated catch rate of trout greater than 14 inches actually doubled from the 2000 rate (Table 8). The long-term objective of increasing the angler catch rate of wild brown trout greater than 14 inches within the no kill area by 25 percent was achieved in the year after the implementation of the no kill regulation. However, it is likely that this was more a function of favorable fishing conditions, rather than the effects of the no-kill regulation (Sanderson 2003). In 2004 (three years after the no kill regulation went into effect), the estimated catch rate of wild brown trout greater than 14 inches decreased slightly (16%) from the 2000 rate. The long-term objective of increasing the angler catch rate of wild brown trout greater than 14 inches within the no kill area by 25 percent was not achieved in 2004. Data presented in Table 8 also shows that a similar decrease in the estimated catch rate of brown trout greater than 12 inches from the wild area occurred between 2004 and 2000 and 2001. An examination of angler interview data reveals that the no kill regulation also did not increase the number of anglers catching large trout in the wild area. It is believed that any permanent changes to the wild brown trout size structure will take some time to occur, if at all. Changes in the wild trout population's size structure is probably better monitored by the annual electrofishing surveys. Analysis of the electrofishing data collected from 1998-2003 is presently being completed (Sanderson, in preparation).

Harvest, Harvest Rates

In 2004, the estimates of brown trout harvest in all areas were 44 percent lower than 2000 and 54 percent lower than 2001. Both the very low estimated creel rates and the interview data from the wild area in 2000 indicate that many anglers fishing in the wild area were practicing catch and release on their own, prior to the regulation mandating it. Many legal size trout (>12 inches)

were caught from this stretch and released. In 2000, interviewed anglers released 351 legal sized brown trout. A similar number (330) were released by interviewed anglers in 2001. In 2004 interviewed anglers released fewer (237).

The increase in wild area harvest three years after the imposition of the no-kill regulation can be best explained by survey design and expansion calculations. Six anglers interviewed in 2004, one each in April, May, and two each in June and July, kept one fish apiece from the wild area. These anglers were in non-compliance with the no-kill regulation. In 2001, a few brown trout were kept in the wild area in April and August (an estimated 9 and 4, respectively). One angler interviewed in April and one interviewed in August were in non-compliance with the new no-kill regulation. In 2000, when creeling trout was legal in the wild area, the peak harvest occurred in April. Four anglers interviewed in 2000, one each in April, May, June, and August, kept fish in the wild area. It appears that the no-kill regulation has limited, but not eliminated brown trout harvest from the wild area of Oatka Creek. Law Enforcement patrols in this area should be increased, particularly in April and May.

Climate and Stream Condition Influences on Early Season Catch and Harvest

In the years surveyed, climatic and stream flow conditions during the month of March were the opposite of the rest of the year. On March 26, 2004, the first increment of yearling and two-year-old brown trout was stocked. The air temperature was 59^0 F and the stream flow was 950 cubic feet per second (cfs) (Table 10, Figure 24). Although the air temperature was warm, which attracted many anglers, the stream flow was high. Stream conditions limited fishing success, resulting in low catch and harvest rates. On March 27, 2000, the first increment of yearling and two-year-old brown trout was stocked. The air temperature was 59^0 F and the stream flow was 210 cubic feet per second (cfs) (Table 12, Figure 26). This relatively warm day with low stream flow conditions was attractive to many anglers. With a fresh influx of vulnerable hatchery fish, and ideal fishing conditions, the result was high catch and harvest rates. Many of the stocked fish were caught and kept within a week of stocking (see discussion below). In contrast, the first increment of yearling and two-year-old brown trout in 2001 was stocked on March 30. The air temperature was 32^0 F with light snow, and the stream flow was 426 cfs (Table 11, Figure 25). These conditions were less favorable to fishing success, and attracted fewer anglers. The less than ideal conditions resulted in few trout being caught and harvested. The less favorable fishing conditions in 2001 and 2004 allowed the stocked fish to be caught over a longer period of time.

The Two-Year-Old Brown Trout Stocking Program and the Influence of the "5/2" Regulation on Two-Year-Old Brown Trout Harvest Rates

In 1997, New York State began a new statewide program of stocking two year old brown trout. When stocked, these fish are between 12 and 15 inches in total length and weigh up to 1.75 pounds. The first increment of trout for Oatka Creek is stocked in late March, prior to the traditional April 1 season opener. However, since Oatka Creek has no closed season, legal fishing can occur during stocking. Stocking of two year old brown trout has proven to be very

popular with anglers, and hatchery staff have observed a perceived increase in “truck following” behavior by fisher men and women on announced stocking days since two year old stocking began (Mack, et al. personal communication).

Sanderson (2003) made some interesting observations about harvest rates of stocked two-year-old brown trout. Table 13 summarizes daily effort, catch, and harvest data from stocking days, census days immediately following stocking days, and the traditional trout season opening day (April 1) in 2004, 2001, and 2000. In 2000, it is estimated that all of the stocked two-year-old brown trout were creeled by April 2, one week after stocking. More than three fourths of them were taken prior to the April first traditional opener. March 27, 2000, the first stocking day, was a Monday. April 1, 2000 was a Saturday. Only those who could fish on a weekday were able to fish on the stocking day. As described in the preceding discussion, this relatively warm day with low stream flow conditions was attractive to many anglers. With a fresh influx of vulnerable hatchery fish, and ideal fishing conditions, the result was high catch and harvest rates, particularly of the larger fish. Few two-year-old fish remained for the weekend and for those opening day anglers who could not fish during the week day. Since two-year-old trout made up at least 80 percent of the daily harvest, and 36 percent of the anglers interviewed had taken their limit of 5 big trout on the days of and near the first stocking, it is clear that fishermen targeted the larger trout. Weather conditions were not as ideal for fishing in 2001. Even so, a little more than half of the two-year-olds were creeled by April first. The portion of the harvest composed of two-year-olds varied from 51 % to 26%, and a very small portion of interviewed anglers kept their limit of large trout. It also appears that harvest of two-year-olds was spread throughout the season to a greater degree in 2001 (Figure 21). The likely reason for this is because some of the two year old brown trout were stocked on unannounced dates that occurred approximately two weeks after the announced stocking dates (Table 13).

Because of these observations, and because it is logistically impractical to stock at additional increments, on October 1, 2002, the trout regulation outside the SRA was changed to permit 5 trout per day of any size to be kept, with no more than two allowed to be larger than 12 inches (known as the “5/2“ regulation). The objective of this regulation is to spread the harvest of stocked two-year-old brown trout among more anglers over a longer period of time, and also limit the harvest of large wild trout. As in 2001, early season weather conditions were not as ideal for fishing in 2004. Under the more restrictive harvest regulation on two-year-old trout, only 30 percent of the two-year-olds were creeled by April first. Since two-year-old trout made up between 83 and 47 percent of the daily harvest, and 57 percent of the anglers interviewed had taken their limit of 2 big trout on the days of and near the first stocking, it is appears that fishermen still targeted the larger trout. However, the data in Figures 20 and 21 appear to show that catch and harvest of two-year-old trout in the stocked area were not spread throughout the season in 2004 to any greater degree than in 2000. Catch and harvest of large brown trout in the stocked area did appear to be more spread throughout the season in 2001. Unannounced stocking likely had more influence on the spreading of the catch and harvest of large trout throughout the season in the stocked area than the “5/2“ regulation.

Data presented in Table 9 shows that in the stocked area, the estimated harvest rates of brown trout greater than 14 inches and greater than 12 inches in total length were similar in 2000 and 2001. In 2004, the estimated harvest rate of brown trout greater than 14 inches was substantially less than in 2000 and 2001 (76 and 67 percent, respectively). Also, the 2004 estimated harvest rate of brown trout greater than 12 inches was less than in 2000 and 2001 (50 and 39 percent, respectively). While this shows that the "5/2" regulation probably reduced the harvest of large trout, Table 9 also shows that the stocked area estimated catch rates of larger trout were also lower in 2004, than 2000 and 2001. The estimated catch rates of brown trout greater than 14 inches and greater than 12 inches in total length were the same in 2000 and 2001. In 2004, the estimated catch rate of brown trout greater than 14 inches was half of the 2000 and 2001 rates. The 2004 estimated catch rate of brown trout greater than 12 inches was one quarter of the 2000 and 2001 rates. It is possible that rather than continuing to fish, anglers chose to stop fishing once they caught their limit of two large trout. An analysis of the interview data shows that under the "5/2" regulation, more anglers fishing in the stocked area caught one large (>12 inches TL) brown trout and fewer anglers caught more than two large trout. Furthermore, under the "5/2" regulation, slightly more anglers fishing in the stocked area creeled two large brown trout, more anglers creeled one large brown trout (but not as effectively as unannounced stockings), and fewer anglers kept more than two brown trout greater than 12 inches in total length. This same analysis shows that the 2001 unannounced stockings spread the catch and harvest of large brown trout among more anglers.

SUMMARY

1. In all areas of Oatka Creek, angler effort, and brown trout catch and harvest were higher during the period of late March through October 2001 (one year post-no kill regulation change) than the same period in 2000 (pre-regulation change) and 2004 (three years post-regulation change). The 2004 total harvest, and the 2004 stocked area effort, catch, and harvest were the lowest of the three years.

2. In all areas of Oatka Creek, total catch rates were the same during the period of late March through October for all three years.

3. In the stocked areas of Oatka Creek, harvest rates were similar during the period of late March through October 2000 and 2001, but lower in 2004. In the wild area, harvest rates were very low in 2000 and 2004, and trout harvest was essentially eliminated by the no-kill regulation in 2001. Despite the existence of the no kill regulation for three years, the 2004 wild area harvest was unexpectedly the highest of the years surveyed.

4. Climatic conditions apparently caused angler effort to be lower in 2000 and 2004 than 2001.

5. It is not likely that the imposition of the no-kill regulation induced an immediate increase in angler effort in the wild area of Oatka Creek. It is possible that increased wild area angler effort in 2004 is a result of the imposition of the no-kill regulation.

6. A decrease in angler effort in the stocked areas of Oatka Creek in 2004 is probably the result of the imposition of the "5/2" regulation.

7. Since catch and harvest rates were the same in 2000 and 2001, the lower effort in 2000 caused catch and harvest to be lower in 2000. Lower stocked area harvest in 2004 is probably the result of the imposition of the "5/2" regulation.

8. More large brown trout were caught from Oatka Creek in 2001 than 2000 and 2004. The fewest large brown trout were caught from the stocked areas of Oatka Creek in 2004.

9. It does not appear that the imposition of the no-kill regulation improved the catch rate of, or number of anglers catching, large (greater than 12 inches) brown trout in the wild area of Oatka Creek.

10. The catch and harvest rates of large brown trout from the stocked areas of Oatka Creek declined considerably in 2004.

11. If weather and flow conditions are favorable on, or immediately after, days that trout are stocked, high catch and creel rates are observed. Under liberal harvest regulations, all of the stocked two year old trout are rapidly harvested under these conditions.

12. The restrictive large trout harvest regulation ("5/2" regulation) only moderately succeeded in spreading the catch and harvest of two-year-old brown trout throughout the season and to more anglers.

RECOMMENDATIONS

1. Although catch rate of larger trout did not increase, continue to implement the no-kill regulation in the wild area of Oatka Creek, since it appears to be socially acceptable. Increase Law Enforcement patrols along the creek in Oatka Creek Park during April and May.

2. Continue to implement the regulation allowing harvest of five trout per day with no more than two over twelve (12) inches in total length in the rest of Oatka Creek. Although it appears that this regulation is only moderately successful at spreading the harvest of the large, two-year-old trout out to more anglers over a longer period of time, it helps to emphasize the greater value placed on larger brown trout.

3. Complete the data analysis and reporting of the 1998-2003 biological monitoring of the no-kill area. This will help determine whether the biological objectives of the no-kill regulation have been met.

4. Reassess stocking rates in light of the new information obtained in these investigations.

ACKNOWLEDGMENTS

Thanks goes to retired Region 8 Fisheries Manager William Abraham. Upon hearing the support for a no kill regulation from the fishermen and women, he initiated the original proposal and encouraged the commencement of the biological and creel surveys.

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Critical review of the grant proposal was provided Senior Aquatic Biologist Steven Hurst. Review of this manuscript was provided by Region 8 Fisheries Manager Web Pearsall, Senior Aquatic Biologist Brad Hammers, Fish Culture Leader Phil Hulbert, and Coldwater Unit Leader James Daley.

Finally, special thanks goes to our "customers", the fishermen and women who patiently fished through three years of our tallying their catch. The many regulars and our creel agents got to know each other on a first name basis. They willingly provided us with their knowledge of the stream, the fish, and in some instances, their "secrets" on how to catch them.

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Figure 1. Oatka Creek study area. Numbered squares are access sites and count and interview areas.

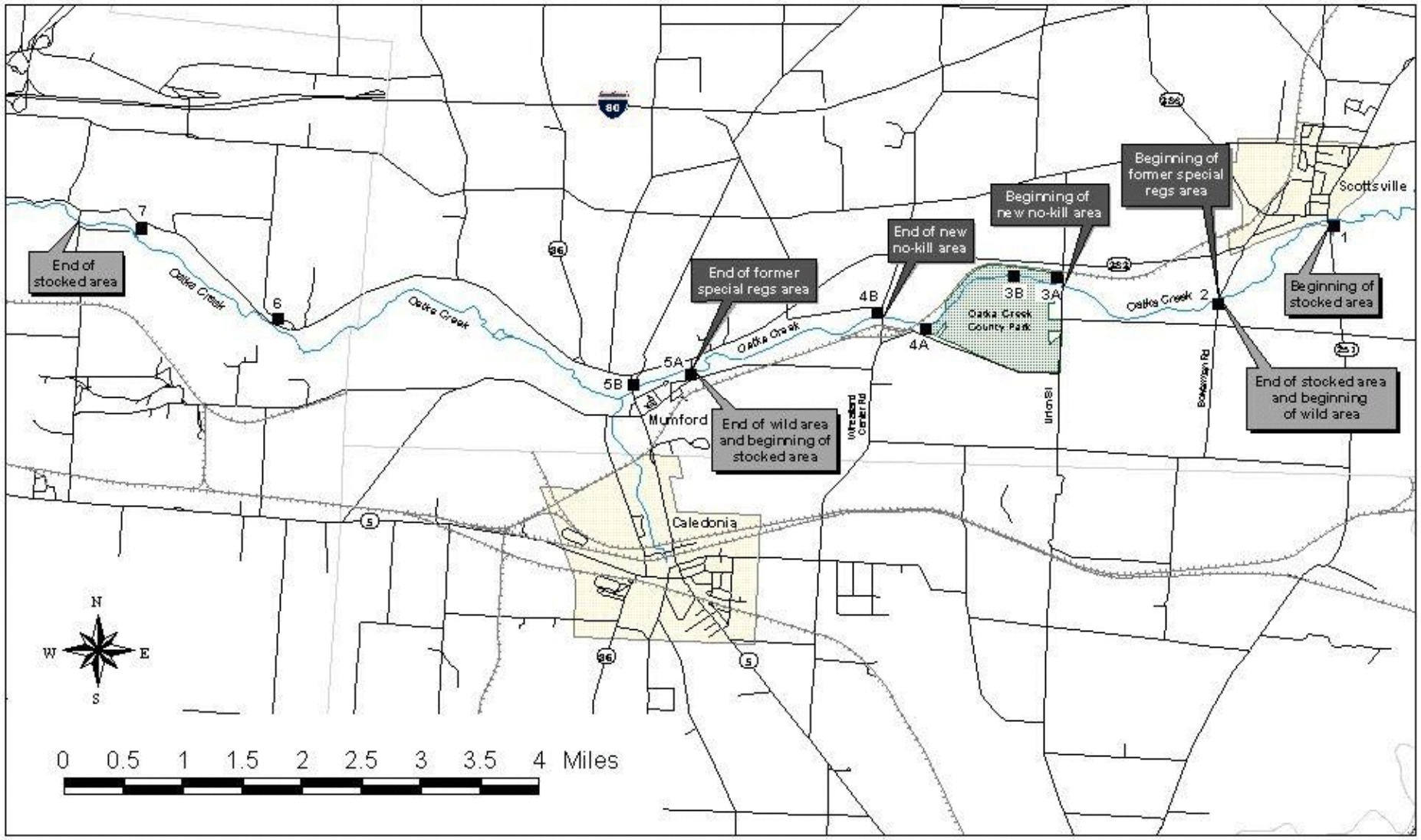


Figure 2. Estimate of total fishing pressure on Oatka Creek.

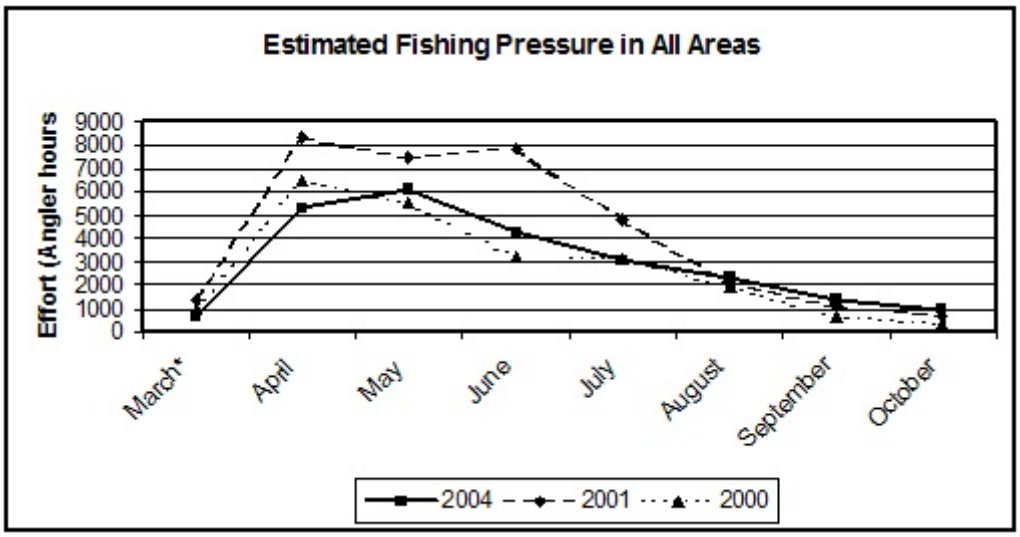


Figure 3. Estimate of fishing pressure in stocked area of Oatka Creek.

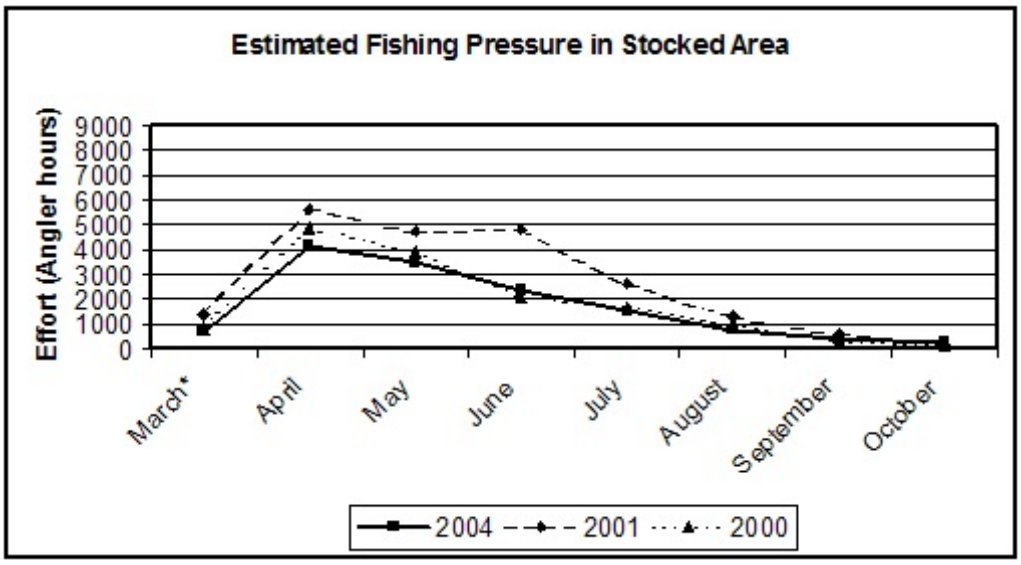


Figure 4. Estimate of fishing pressure in the wild area of Oatka Creek.

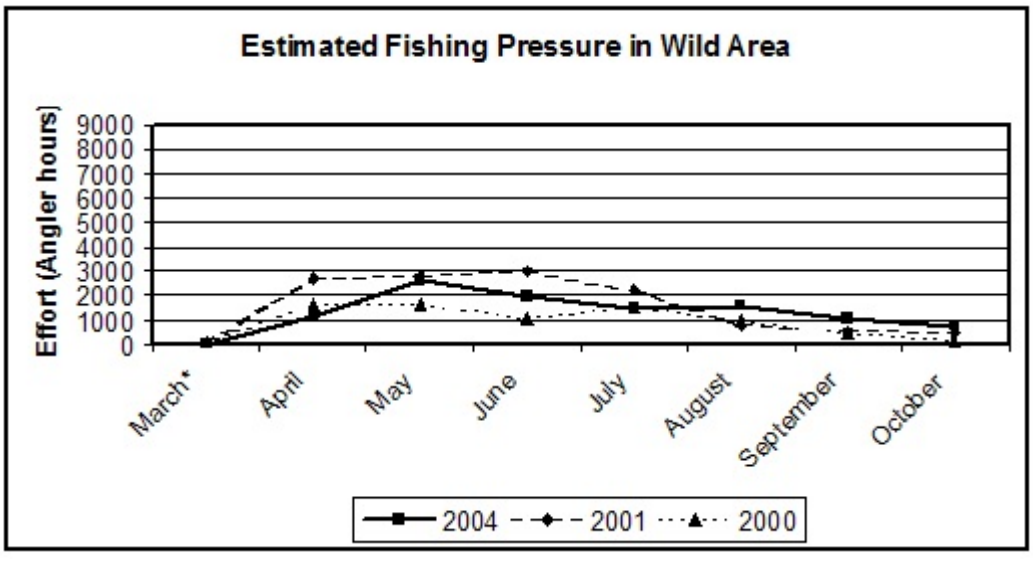


Figure 5. Estimate of total fishing pressure on Oatka Creek in hours per acre.

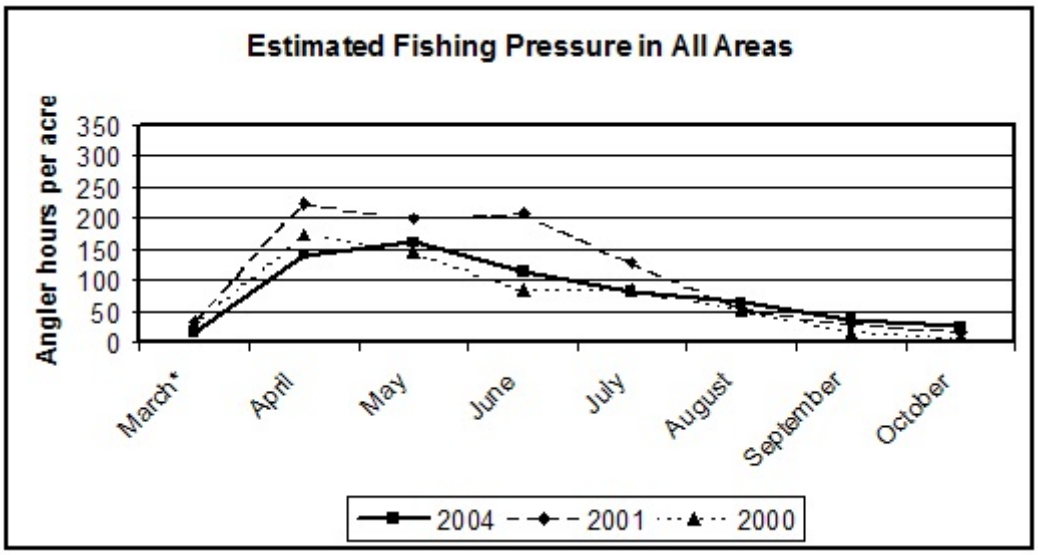


Figure 6. Estimate of fishing pressure in the stocked area of Oatka Creek in hours per acre.

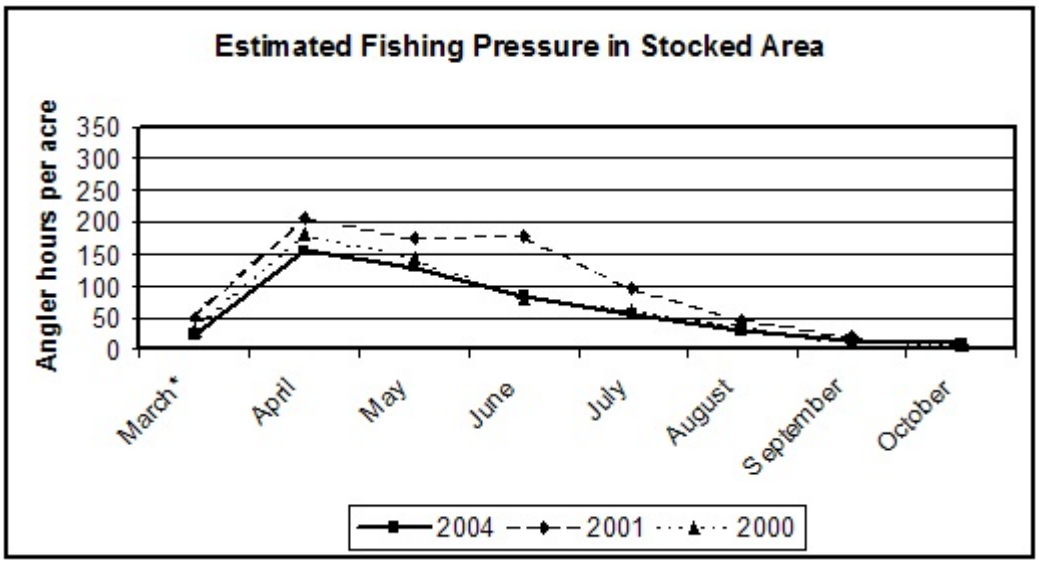


Figure 7. Estimate of fishing pressure in the wild area of Oatka Creek in hours per acre.

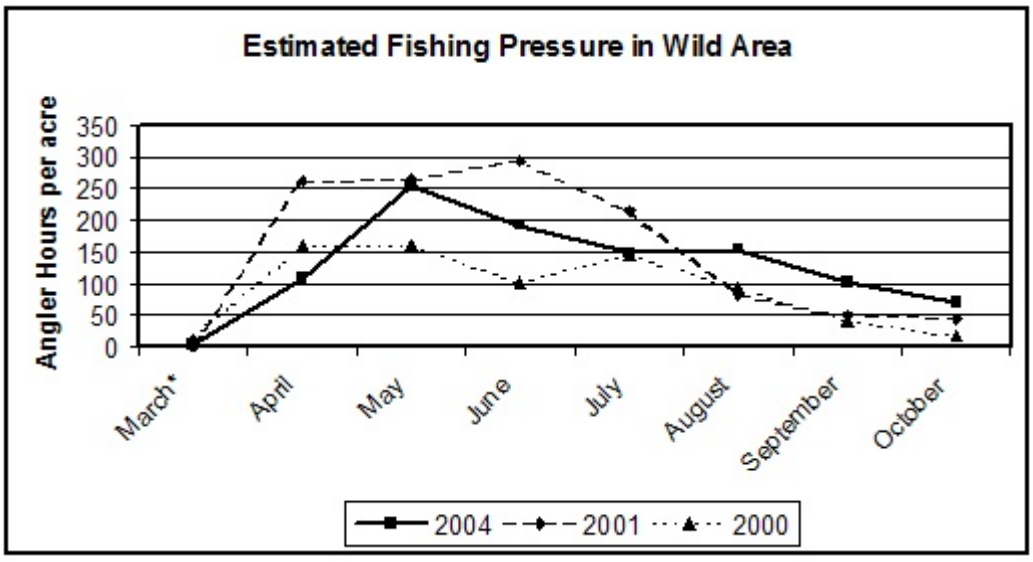


Figure 8. Estimate of total catch on Oatka Creek.

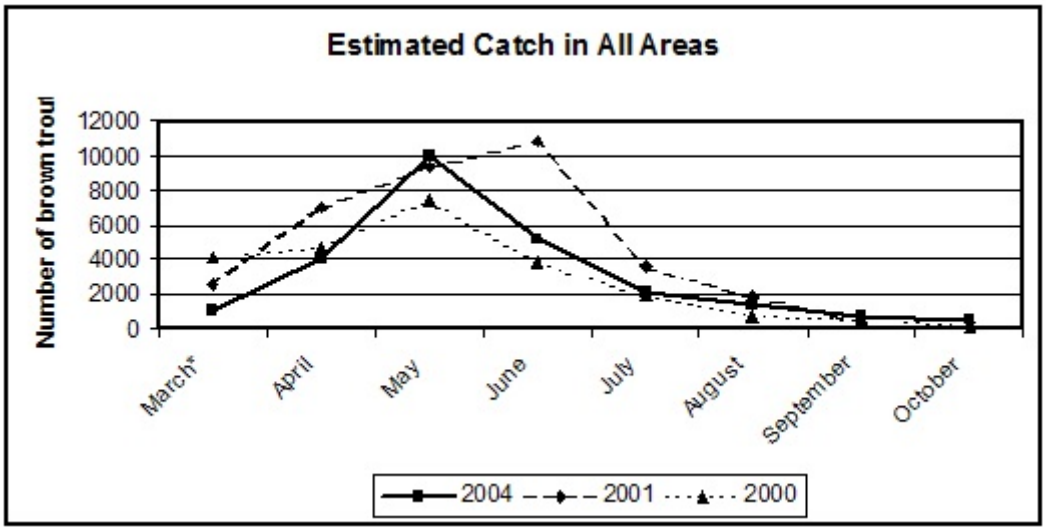


Figure 9. Estimate of catch in the stocked areas of Oatka Creek.

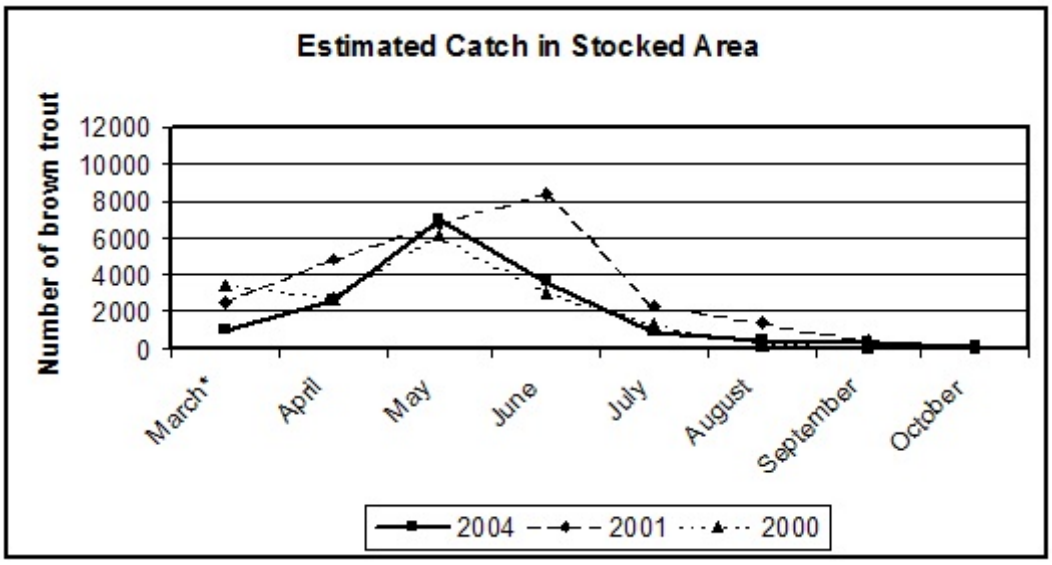


Figure 10. Estimate of catch in the wild area of Oatka Creek.

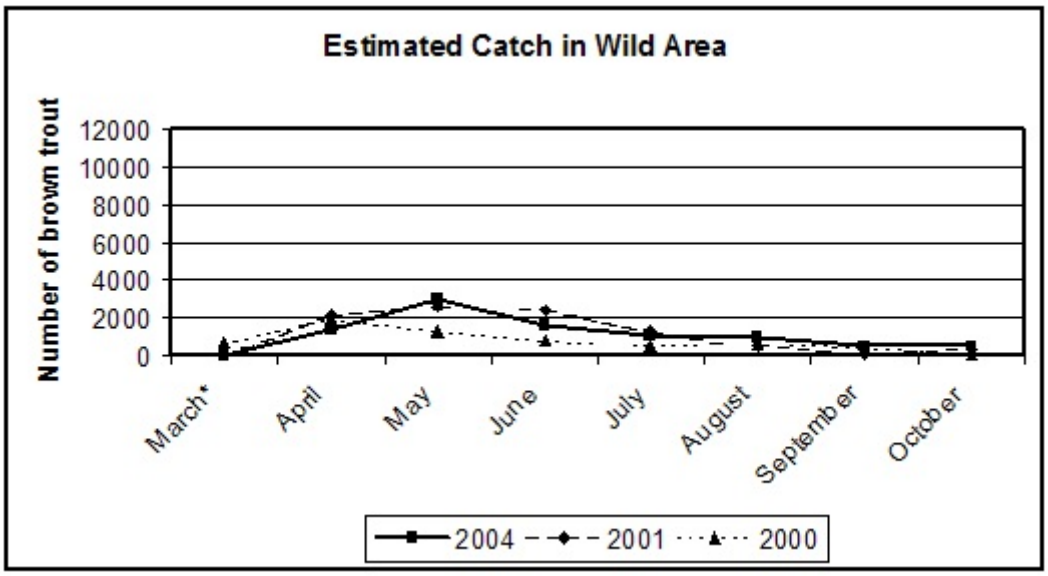


Figure 11. Estimate of total catch rates in Oatka Creek.

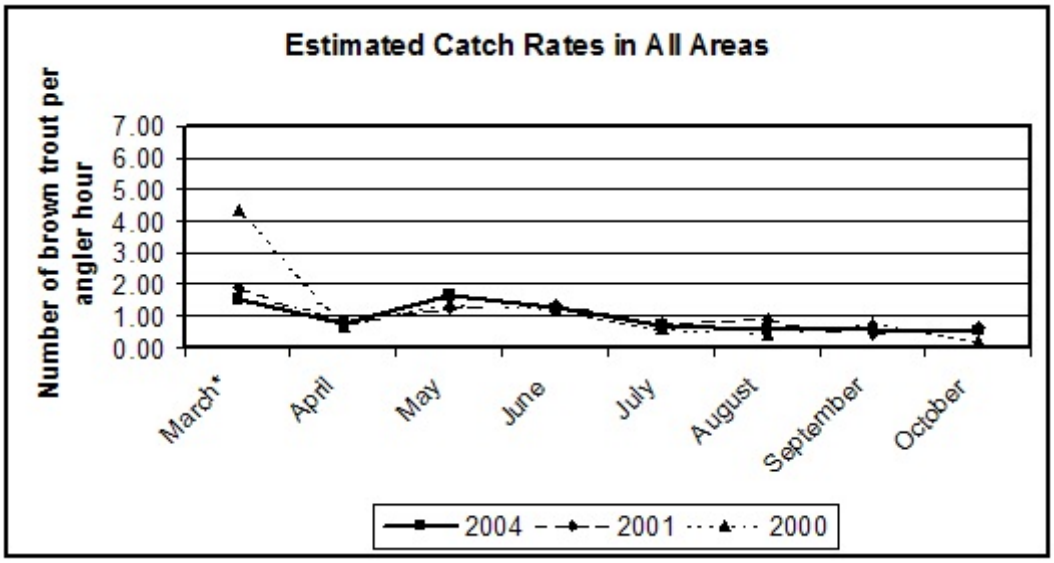


Figure 12. Estimate of catch rates in the stocked areas of Oatka Creek.

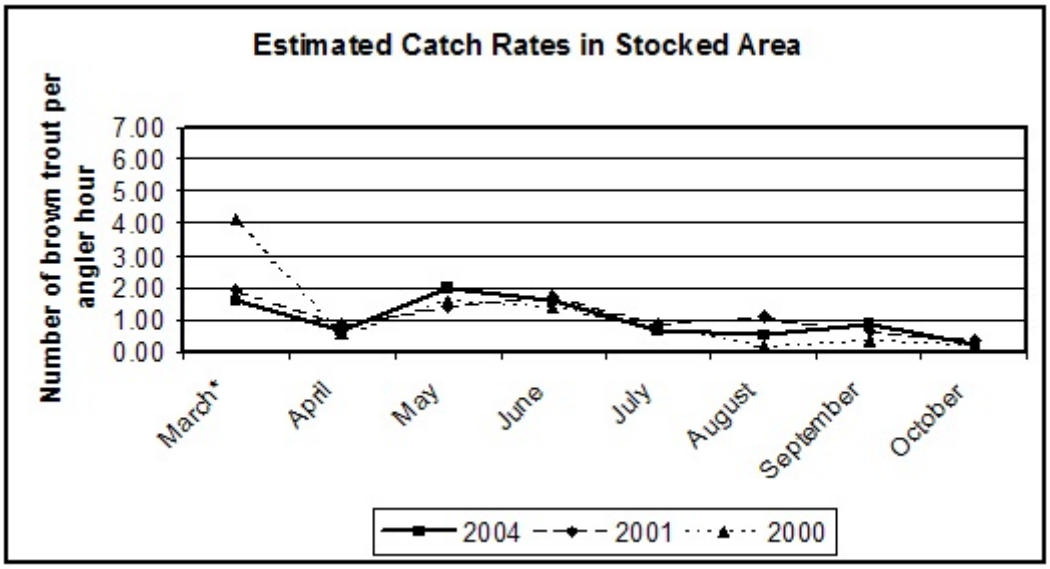


Figure 13. Estimate of catch rates in the wild area of Oatka Creek.

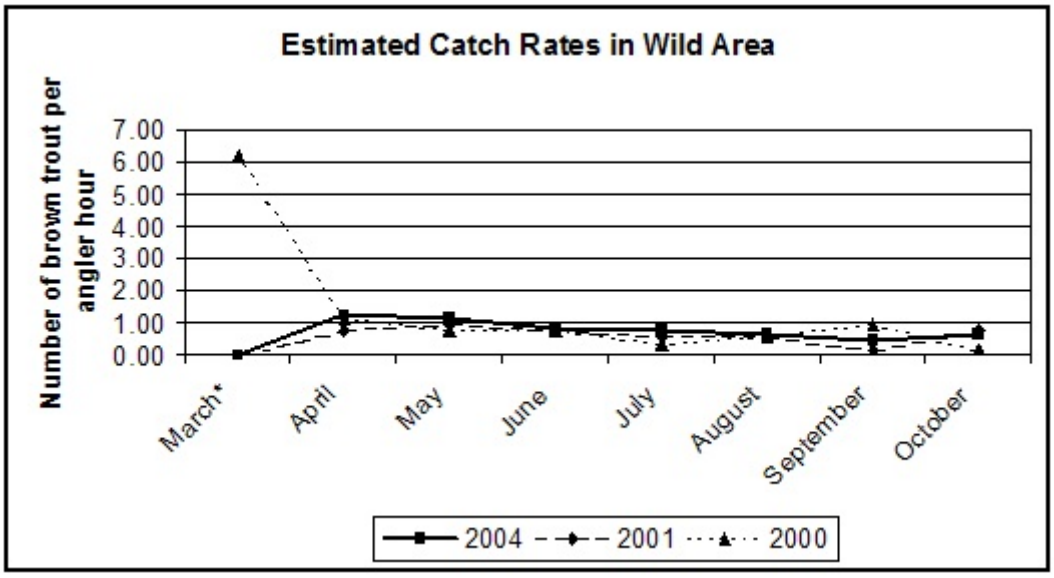


Figure 14. Estimate of total harvest in Oatka Creek.

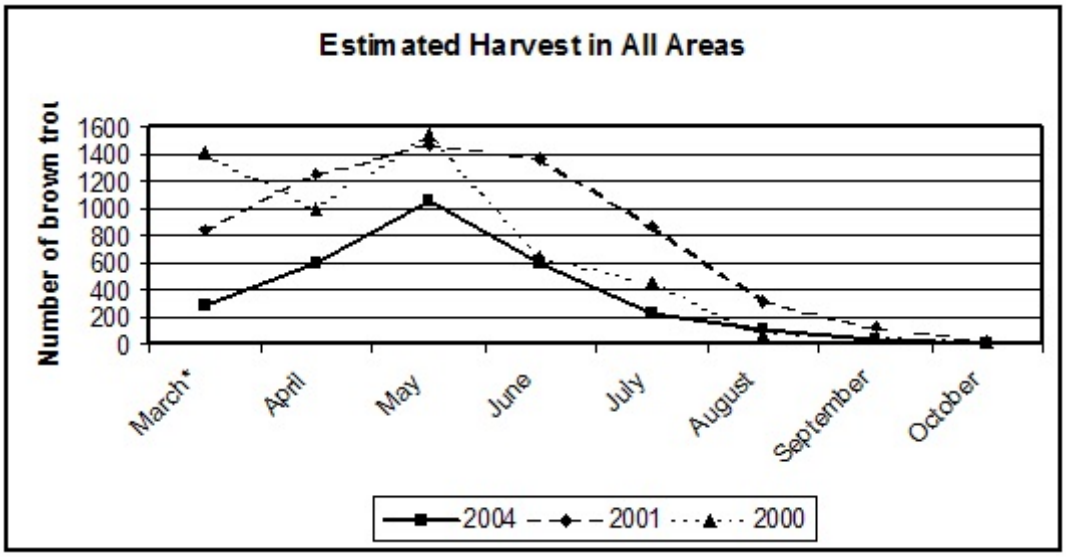


Figure 15. Estimate of harvest in the stocked areas of Oatka Creek.

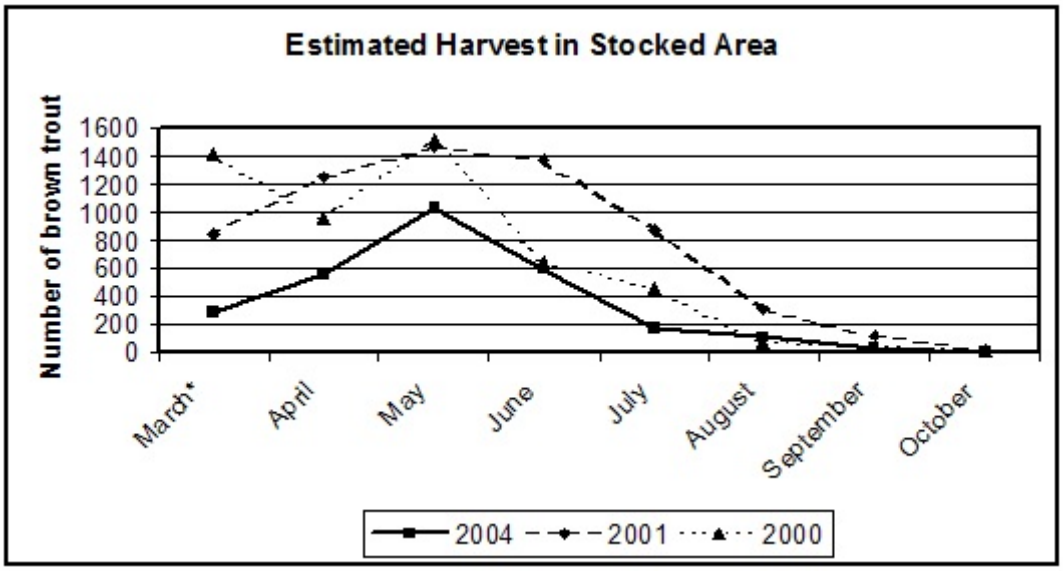


Figure 16. Estimate of harvest in the wild area of Oatka Creek.

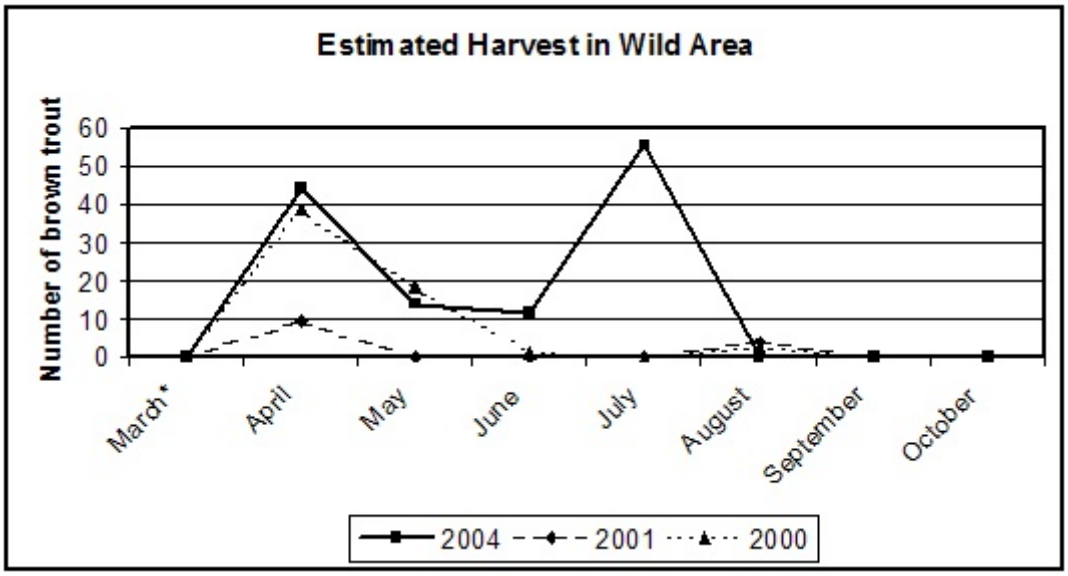


Figure 17. Estimate of total harvest rates in Oatka Creek.

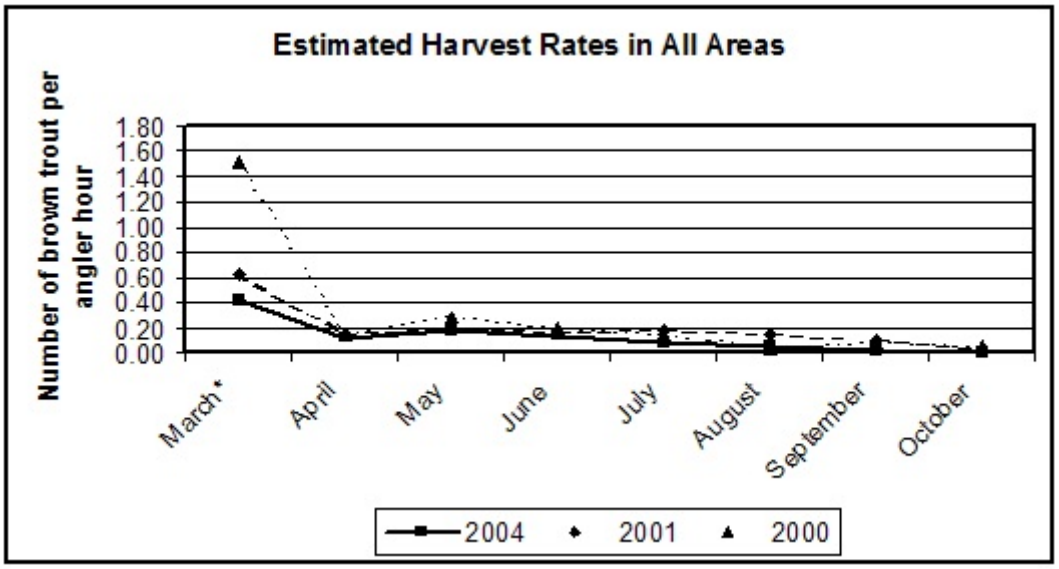


Figure 18. Estimate of harvest rates in the stocked area of Oatka Creek.

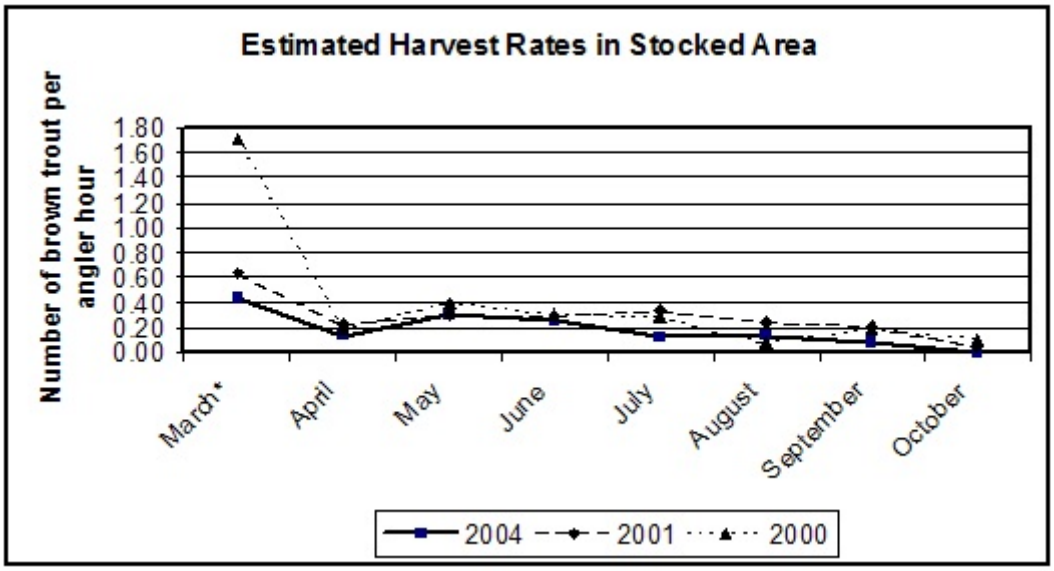


Figure 19. Estimate of harvest rates in the wild area of Oatka Creek.

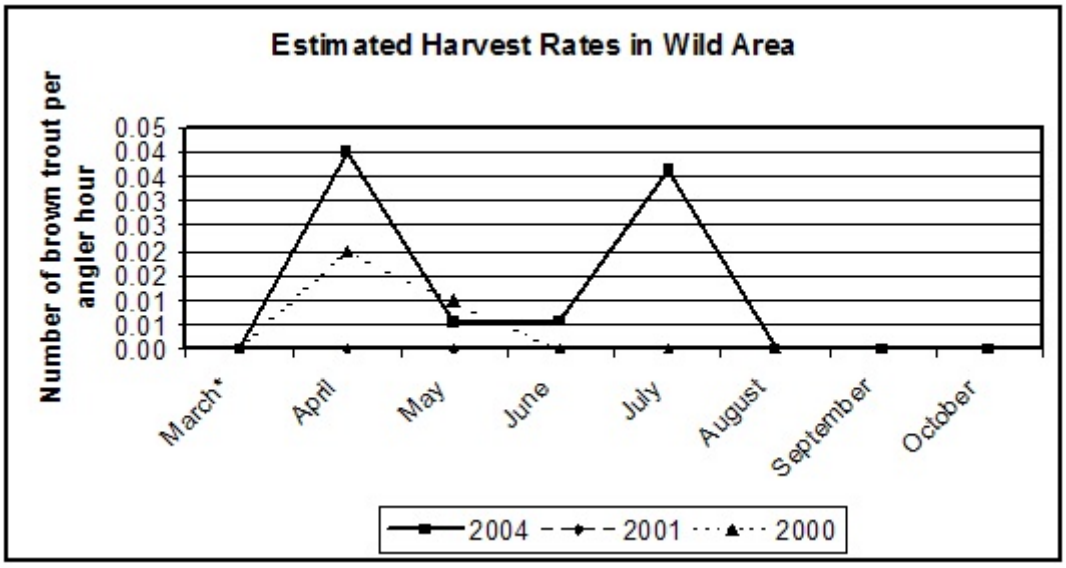


Figure 20. Estimated catch of large (>12 inches Total Length) brown trout in the stocked area of Oatka Creek.

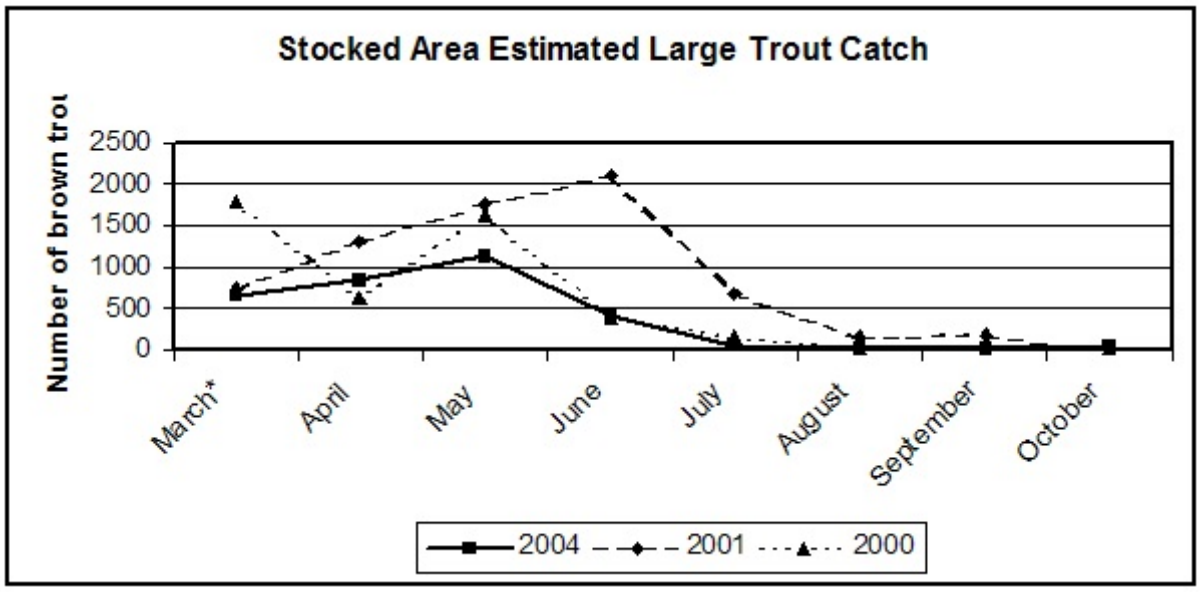


Figure 21. Estimated harvest of large (>12 inches Total Length) brown trout in the stocked area of Oatka Creek.

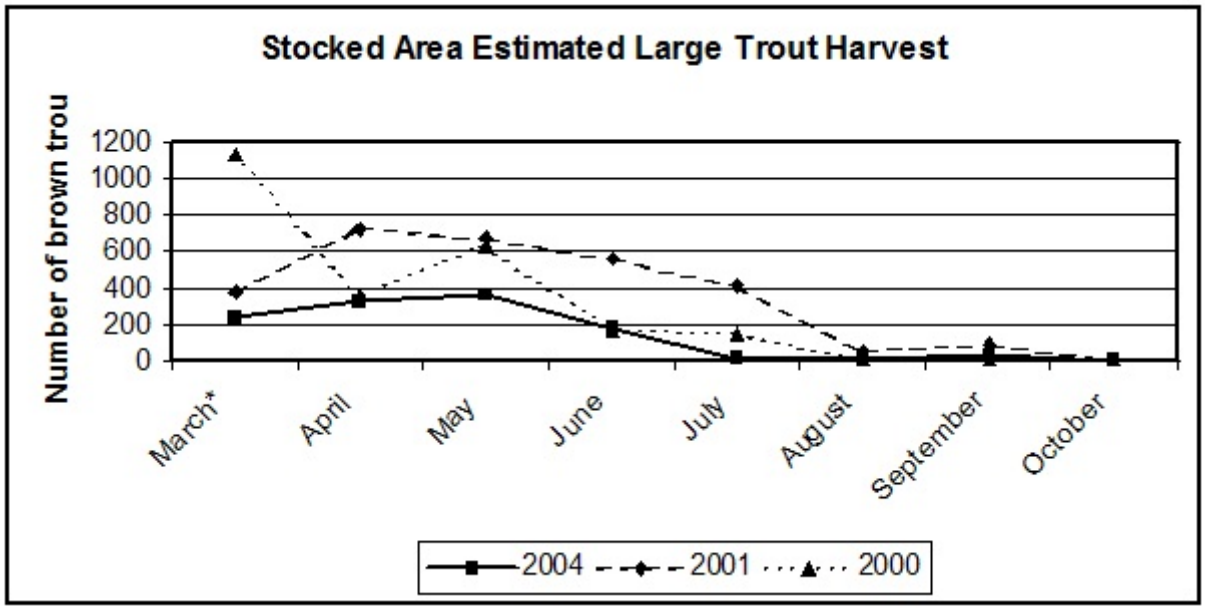


Figure 22. Monthly mean observed air temperatures from March to October 2004, 2001 and 2000.

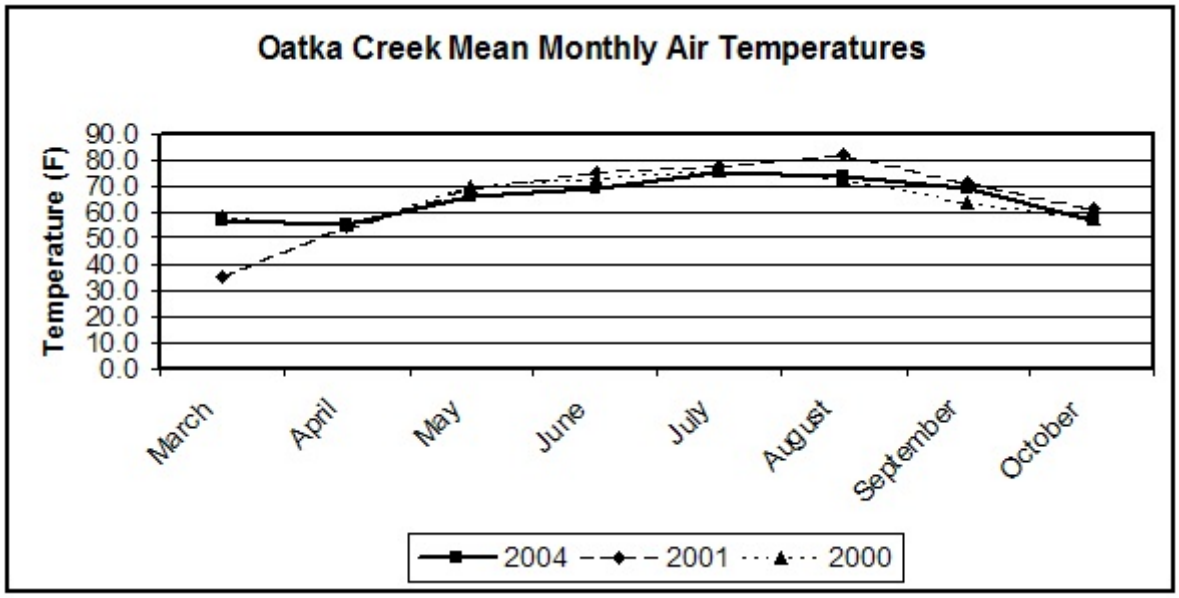


Figure 23. Monthly mean observed water temperatures in Oatka Creek from March to October 2004, 2001, and 2000

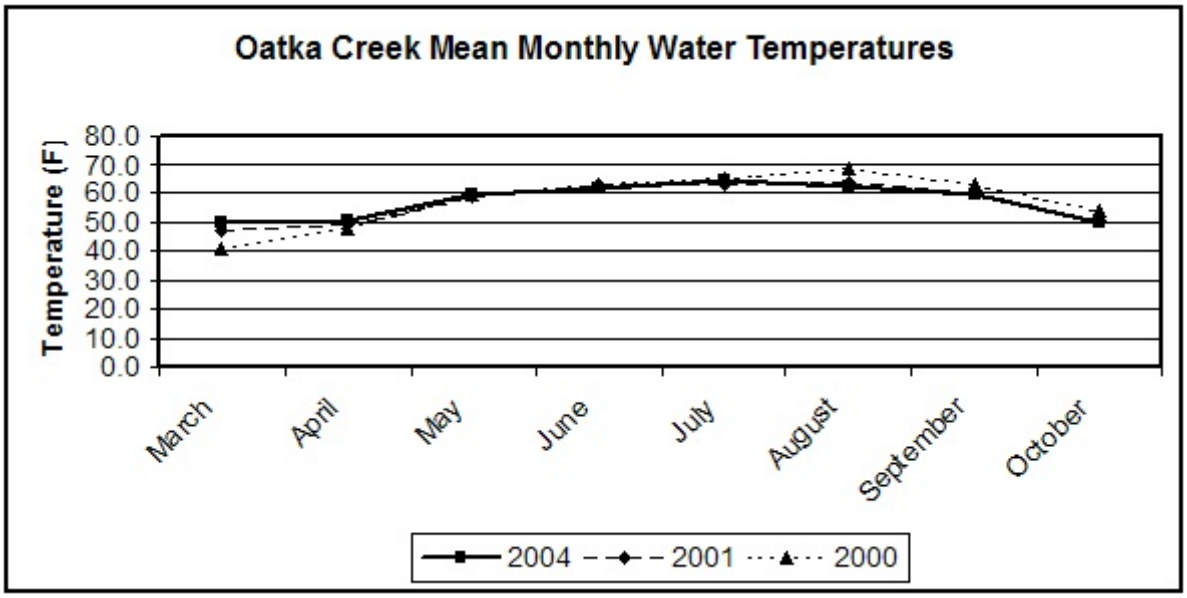
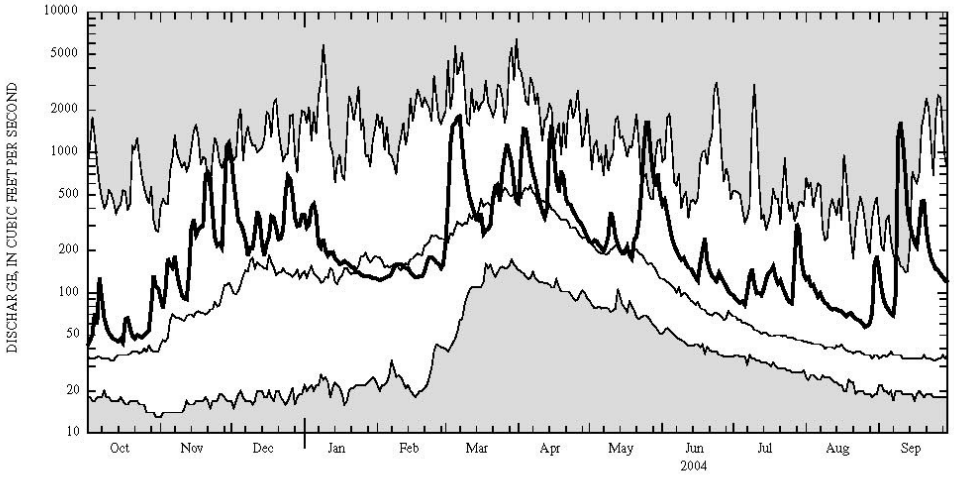


Figure 24. Water year 2004 daily mean discharge from Oatka Creek with daily median for the period of record (from Hornlein, et al. 2004).

04230500 OATKA CREEK AT GARBUTT, NY—Continued

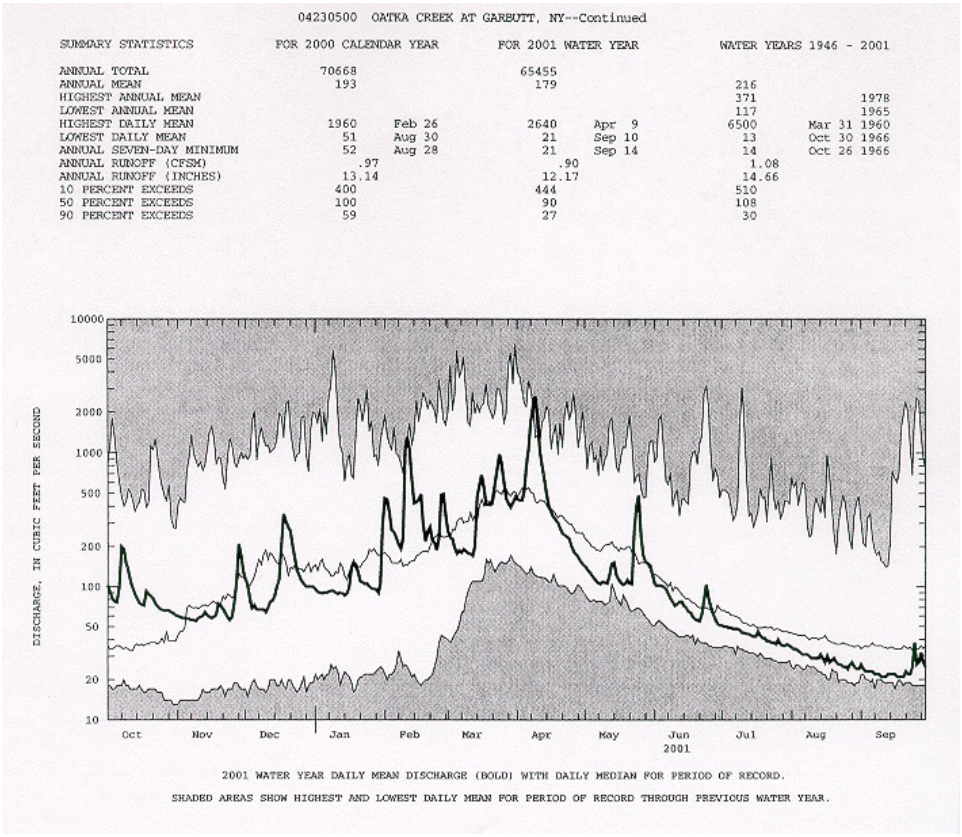
SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1946 - 2004	
ANNUAL TOTAL	91,232		110,104			
ANNUAL MEAN	250		301		217	
HIGHEST ANNUAL MEAN					371	1978
LOWEST ANNUAL MEAN					117	1965
HIGHEST DAILY MEAN	2,220	Mar 19	1,810	Mar 7	6,500	Mar 31, 1960
LOWEST DAILY MEAN	38	Sep 21	42	Oct 1	13	Oct 30, 1966
ANNUAL SEVEN-DAY MINIMUM	41	Sep 19	47	Oct 10	14	Oct 26, 1966
ANNUAL RUNOFF (CFSM)	1.25		1.50		1.08	
ANNUAL RUNOFF (INCHES)	16.97		20.48		14.73	
10 PERCENT EXCEEDS	496		692		510	
50 PERCENT EXCEEDS	176		178		110	
90 PERCENT EXCEEDS	48		71		30	

e Estimated



2004 WATER YEAR DAILY MEAN DISCHARGE (BOLD) WITH DAILY MEDIAN FOR PERIOD OF RECORD.
SHADED AREAS SHOW HIGHEST AND LOWEST DAILY MEAN FOR PERIOD OF RECORD THROUGH PREVIOUS WATER YEAR.

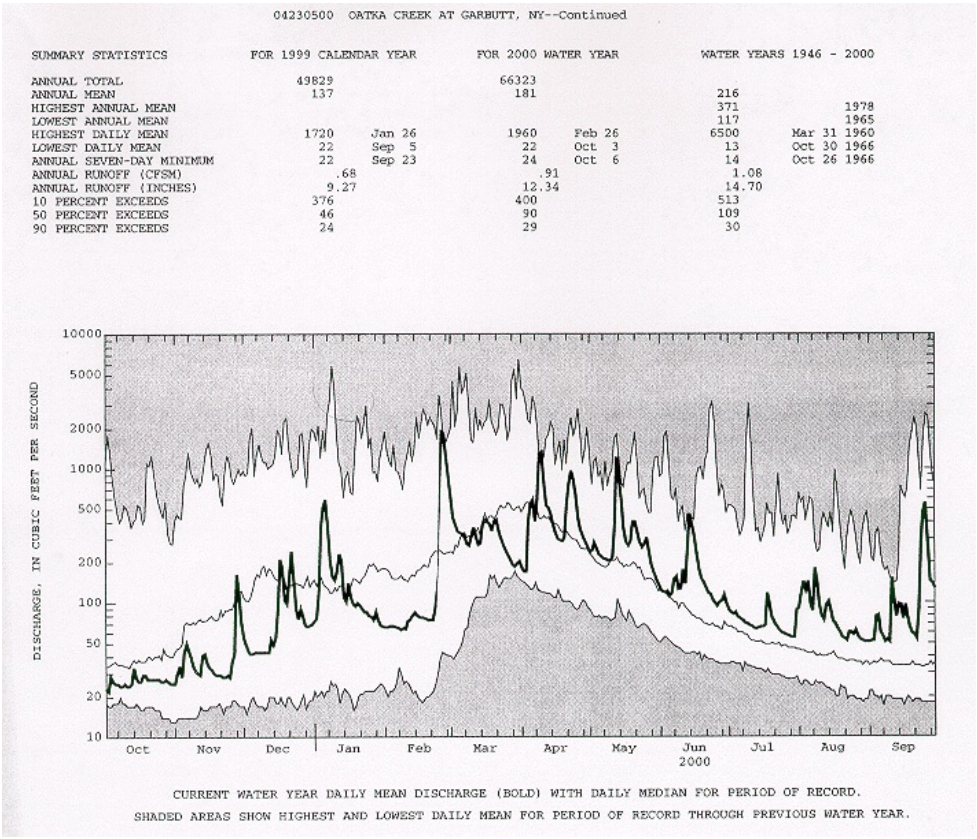
Figure 25. Water year 2001 daily mean discharge from Oatka Creek with daily median for the period of record (from Hornlein, et al. 2002).



04230500 OATKA CREEK AT GARBUTT, NY--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1946 - 2001	
ANNUAL TOTAL	70668		65455			
ANNUAL MEAN	193		179		216	
HIGHEST ANNUAL MEAN					371	1978
LOWEST ANNUAL MEAN					117	1965
HIGHEST DAILY MEAN	1960	Feb 26	2640	Apr 9	6500	Mar 31 1960
LOWEST DAILY MEAN	51	Aug 30	21	Sep 10	13	Oct 30 1966
ANNUAL SEVEN-DAY MINIMUM	52	Aug 28	21	Sep 14	14	Oct 26 1966
ANNUAL RUNOFF (CFSM)	.97		.90		1.08	
ANNUAL RUNOFF (INCHES)	13.14		12.17		14.66	
10 PERCENT EXCEEDS	400		444		510	
50 PERCENT EXCEEDS	100		90		108	
90 PERCENT EXCEEDS	59		27		30	

Figure 26. Water year 2000 daily mean discharge from Oatka Creek with daily median for the period of record (from Hornlein, et al. 2001).



04230500 OATKA CREEK AT GARBUTT, NY--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1946 - 2000	
ANNUAL TOTAL	49829		66323			
ANNUAL MEAN	137		181		216	
HIGHEST ANNUAL MEAN					371	1978
LOWEST ANNUAL MEAN					117	1965
HIGHEST DAILY MEAN	1720	Jan 26	1960	Feb 26	6500	Mar 31 1960
LOWEST DAILY MEAN	22	Sep 5	22	Oct 3	13	Oct 30 1966
ANNUAL SEVEN-DAY MINIMUM	22	Sep 23	24	Oct 6	14	Oct 26 1966
ANNUAL RUNOFF (CFSM)	.68		.91		1.08	
ANNUAL RUNOFF (INCHES)	9.27		12.34		14.70	
10 PERCENT EXCEEDS	376		400		513	
50 PERCENT EXCEEDS	46		90		109	
90 PERCENT EXCEEDS	24		29		30	

Table 1. Estimate of fishing pressure in hours on Oatka Creek

2004						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	658.00	210.00	21.00	21.00	679.00	211.05
April	4,161.50	751.30	1,104.25	285.75	5,265.75	803.81
May	3,473.33	747.39	2,610.83	814.83	6,084.17	1,105.69
June	2,292.80	379.55	1,979.66	317.22	4,272.46	488.70
July	1,500.00	380.81	1,524.00	332.73	3,024.00	505.69
August	781.88	216.52	1,582.13	441.88	2,364.00	492.07
September	359.10	237.41	1,045.80	662.60	1,404.90	703.84
October	219.00	105.80	735.00	318.78	954.00	335.88
Total	13,445.61	1,222.36	10,602.67	1,328.13	24,048.27	2,230.91
2001						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	1,337.00	35.00	0.00	0.00	1,337.00	35.00
April	5,621.88	780.51	2,698.50	1,204.56	8,320.38	1,435.33
May	4,730.62	462.91	2,745.00	488.17	7,475.63	672.76
June	4,831.33	645.37	3,022.67	560.57	7,854.00	854.83
July	2,591.47	463.05	2,225.60	487.49	4,817.07	672.35
August	1,275.00	289.65	841.88	240.87	2,116.88	376.71
September	582.17	174.32	525.58	167.24	1,107.75	241.57
October	172.00	48.70	438.00	188.27	610.00	194.46
Total	21,141.47	1,253.91	12,497.23	1,537.07	33,638.71	1,983.65
2000						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	826.00	570.79	112.00	56.00	938.00	573.53
April	4,865.00	805.26	1,659.00	415.63	6,524.00	906.19
May	3,876.67	1,064.53	1,662.50	391.06	5,539.17	1,134.09
June	2,124.44	381.42	1,063.11	214.19	3,187.56	437.44
July	1,632.00	359.21	1,506.67	202.75	3,138.67	412.48
August	966.00	179.97	967.50	233.63	1,933.50	294.91
September	233.33	82.17	420.00	88.54	653.33	120.79
October	150.00	113.58	180.00	94.87	330.00	147.99
Total	14,673.44	1,560.13	7,570.78	698.01	22,244.23	1,709.16

Table 2. Estimate of fishing pressure on Oatka Creek in hours per acre

2004			
Month	**Stocked**	**Wild**	**Total**
March	24.33	2.04	18.18
April	153.84	107.21	140.98
May	128.40	253.48	162.90
June	84.76	192.20	114.39
July	55.45	147.96	80.96
August	28.90	153.60	63.29
September	13.28	101.53	37.61
October	8.10	71.36	25.54
Totals	497.07	1,029.38	643.86
2001			
Month	**Stocked**	**Wild**	**Total**
March	49.42	0.00	35.79
April	207.80	261.91	222.71
May	174.86	266.43	200.10
June	178.58	293.38	210.22
July	95.79	216.01	128.94
August	47.13	81.71	56.66
September	21.52	51.01	29.65
October	6.36	42.51	16.33
Total	781.57	1,213.32	900.39
2000			
Month	**Stocked**	**Wild**	**Total**
March	30.53	10.87	25.11
April	179.82	161.02	174.63
May	143.29	161.36	148.26
June	78.52	103.18	85.32
July	60.32	146.24	84.01
August	35.71	93.90	51.75
September	8.62	40.76	17.49
October	5.54	17.47	8.83
Total	542.46	735.03	595.40

Table 3. Estimate of Brown trout catch on Oatka Creek.

2004						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	1,049.92	88.52	0.00	0.00	1,049.92	88.52
April	2,626.91	670.79	1,362.13	479.15	3,989.04	824.34
May	6,937.49	1,660.87	2,996.96	1,037.16	9,934.45	1,958.11
June	3,613.60	638.03	1,630.73	444.16	5,244.33	777.41
July	950.34	291.78	1,140.72	266.04	2,091.06	394.85
August	396.06	177.93	1,029.59	282.61	1,425.65	333.96
September	313.88	275.79	477.52	229.09	791.40	358.53
October	52.87	38.09	466.75	258.26	519.62	261.06
Totals	15,941.06	1,953.89	9,104.40	1,331.31	25,045.46	2,364.34
2001						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	2,558.08	782.53	0.00	0.00	2,558.08	782.53
April	4,798.34	1,032.74	2,165.28	1,042.11	6,963.62	1,467.16
May	6,724.01	1,015.91	2,618.91	817.52	9,342.92	1,304.00
June	8,391.69	1,756.06	2,404.32	573.76	10,796.01	1,847.42
July	2,304.15	694.30	1,294.38	407.56	3,598.53	805.09
August	1,411.73	744.47	477.35	216.98	1,889.08	775.44
September	380.93	170.20	94.54	32.77	475.48	173.32
October	61.51	50.86	337.14	85.67	398.64	99.63
Total	26,630.44	2,619.65	9,391.92	1,518.27	36,022.36	3,027.82
2000						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	3,403.10	2,629.95	688.75	663.78	4,091.86	2,712.42
April	2,769.65	958.17	1,870.29	828.64	4,639.94	1,266.78
May	6,161.04	2,260.57	1,290.54	363.90	7,451.58	2,289.67
June	2,988.82	769.02	805.62	268.81	3,794.44	814.65
July	1,350.23	540.72	539.48	326.42	1,889.71	631.61
August	167.23	70.26	579.22	239.60	746.45	249.69
September	83.55	48.87	399.07	328.27	482.61	331.89
October	32.00	32.00	35.56	29.04	67.56	43.21
Total	16,955.62	3,719.81	6,208.53	1,266.69	23,164.15	3,929.57

Table 4. Estimate of Brown trout catch rates (fish/angler hour) on Oatka Creek.

2004			
Month	**Stocked**	**Wild**	**Total**
March	1.60	0.00	1.55
April	0.63	1.23	0.76
May	2.00	1.15	1.63
June	1.58	0.82	1.23
July	0.63	0.75	0.69
August	0.51	0.65	0.60
September	0.87	0.46	0.56
October	0.24	0.64	0.54
Total	1.19	0.86	1.04
2001			
Month	**Stocked**	**Wild**	**Total**
March	1.91	0.00	1.91
April	0.85	0.80	0.84
May	1.42	0.95	1.25
June	1.74	0.80	1.37
July	0.89	0.58	0.75
August	1.11	0.57	0.89
September	0.65	0.18	0.43
October	0.36	0.77	0.65
Total	1.26	0.75	1.07
2000			
Month	**Stocked**	**Wild**	**Total**
March	4.12	6.15	4.36
April	0.57	1.13	0.71
May	1.59	0.78	1.35
June	1.41	0.76	1.19
July	0.83	0.36	0.60
August	0.17	0.60	0.39
September	0.36	0.95	0.74
October	0.21	0.20	0.20
Total	1.16	0.82	1.04

Table 5. Estimate of Brown trout harvest on Oatka Creek.

2004						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	287.09	44.41	0.00	0.00	287.09	44.41
April	554.25	135.32	44.10	44.10	598.35	142.32
May	1,037.46	263.00	13.75	13.75	1,051.21	263.36
June	588.00	124.01	11.34	8.19	599.34	124.28
July	176.16	103.28	55.35	39.17	231.51	110.46
August	109.22	84.09	0.00	0.00	109.22	84.09
September	29.42	23.84	0.00	0.00	29.42	23.84
October	0.00	0.00	0.00	0.00	0.00	0.00
Total	2,781.61	350.91	124.54	61.12	2,906.15	356.20
2001						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	848.46	246.93	0.00	0.00	848.46	246.93
April	1,246.94	270.53	9.33	9.33	1,256.27	270.69
May	1,468.39	294.69	0.00	0.00	1,468.39	294.69
June	1,374.34	212.09	0.00	0.00	1,374.34	212.09
July	872.80	286.79	0.00	0.00	872.80	805.09
August	311.22	158.22	4.04	4.04	315.27	158.27
September	122.23	66.22	0.00	0.00	122.23	66.22
October	9.14	9.14	0.00	0.00	9.14	9.14
Total	6,253.52	614.60	13.37	10.17	6,266.90	614.69
2000						
Month	**Stocked**	**SE**	**Wild**	**SE**	**Total**	**SE**
March	1,416.29	1,166.79	0.00	0.00	1,416.29	1,166.79
April	959.27	384.32	38.89	38.89	998.16	386.29
May	1,522.23	625.13	18.33	18.33	1,540.57	625.40
June	647.98	202.55	0.95	0.95	648.94	202.55
July	462.86	236.93	0.00	0.00	462.86	236.93
August	65.18	29.68	2.46	2.46	67.64	29.78
September	45.92	39.76	0.00	0.00	45.92	39.76
October	16.00	16.00	0.00	0.00	16.00	16.00
Total	5,135.74	1,414.13	60.64	43.07	5,196.38	1,414.79

Table 6. Estimate of Brown trout harvest rates (fish/angler hour) on Oatka Creek.

2004			
Month	**Stocked**	**Wild**	**Total**
March	0.44	0.00	0.42
April	0.13	0.04	0.11
May	0.30	0.01	0.17
June	0.26	0.01	0.14
July	0.12	0.04	0.08
August	0.14	0.00	0.05
September	0.08	0.00	0.02
October	0.00	0.00	0.00
Total	0.21	0.01	0.12
2001			
Month	**Stocked**	**Wild**	**Total**
March	0.63	0.00	0.63
April	0.22	<0.01	0.15
May	0.31	0.00	0.20
June	0.28	0.00	0.17
July	0.34	0.00	0.18
August	0.24	<0.01	0.15
September	0.21	0.00	0.11
October	0.05	0.00	0.01
Total	0.30	<0.01	0.19
2000			
Month	**Stocked**	**Wild**	**Total**
March	1.71	0.00	1.51
April	0.20	0.02	0.15
May	0.39	0.01	0.28
June	0.31	0.00	0.20
July	0.28	0.00	0.15
August	0.07	0.00	0.03
September	0.20	0.00	0.07
October	0.11	0.00	0.05
Total	0.35	0.01	0.23

Table 7. Comparison of 2000, 2001, and 2004 Oatka Creek creel survey results.

			2000-2001			2000-2004		2001-2004	
	2000	**2001**	Difference	%Change	**2004**	Difference	%Change	Difference	%Change
All Areas									
Effort	22,244.22	33,638.69	11,394.47	51.22%	24,048.27	1,804.05	8.11%	-9,590.42	-28.51%
Effort per Acre	595.4	900.38	304.98	51.22%	643.86	48.46	8.14%	-256.52	-28.49%
Catch	23,164.15	36,022.35	12,858.20	55.51%	25,045.46	1,881.31	8.12%	-10,976.89	-30.47%
Catch Rate	1.04	1.07	0.03	2.83%	1.04	0.00	0.00%	-0.03	-2.67%
Harvest	5,196.38	6,266.90	1,070.51	20.60%	2,906.15	-2,290.23	-44.07%	-3,360.75	-53.63%
Harvest Rate	0.23	0.19	-0.05	-20.25%	0.12	-0.11	-47.46%	-0.07	-36.40%
Stocked Area									
Effort	14,673.44	21,141.47	6,468.02	44.08%	13,445.61	-1,227.83	-8.37%	-7,695.86	-36.40%
Effort per Acre	543.46	781.57	238.11	43.81%	497.07	-46.39	-8.54%	-284.50	-36.40%
Catch	16,955.62	26,630.44	9,674.82	57.06%	15,941.06	-1,014.56	-5.98%	-10,689.38	-40.14%
Catch Rate	1.16	1.26	0.1	9.01%	1.19	0.03	2.21%	-0.07	-5.91%
Harvest	5,135.74	6,253.52	1,117.78	21.76%	2,781.61	-2,354.13	-45.84%	-3,471.91	-55.52%
Harvest Rate	0.35	0.30	-0.05	-15.49%	0.21	-0.14	-40.89%	-0.09	-31.04%
Wild Area									
Effort	7,570.78	12,497.23	4,926.45	65.07%	10,602.67	3,031.89	40.05%	-1,894.56	-15.16%
Effort per Acre	735.03	1,213.32	478.29	65.07%	1,029.38	294.35	40.05%	-183.94	-15.16%
Catch	6,208.53	9,391.92	3,183.38	51.27%	9,104.40	2,895.87	46.64%	-287.52	-3.06%
Catch Rate	0.82	0.75	-0.07	-8.36%	0.86	0.04	4.72%	0.11	14.49%
Harvest	60.64	13.37	-47.26	-77.94%	124.54	63.90	105.37%	111.17	831.47%
Harvest Rate	0.01	0.00	-0.01	-86.64%	0.01	0.00	0.00%	0.01	100.00%

Table 8. Comparison of large trout estimated catch from 2000, 2001, and 2004 Oatka creek creel survey results.

			2000-2001			2000-2004		2001-2004	
	2000	**2001**	Difference	%Change	**2004**	Difference	%Change	Difference	%Change
All Areas									
>14" Catch	2923.56	4793.42	1869.86	63.96%	1577.85	-1,345.71	-46.03%	3,215.57	-67.08%
>14" Catch Rate	0.13	0.14	0.01	7.69%	0.07	-0.06	-49.53%	-0.07	-53.13%
14"-12" Catch	3385.50	5723.93	2338.43	69.07%	3541.08	155.58	4.60%	-2,182.85	-38.14%
14"-12" Catch Rate	0.15	0.17	0.02	13.33%	0.15	-0.00	-1.83%	-0.02	-13.38%
>12" Catch	6309.06	10517.35	4208.29	66.70%	5118.92	-1,190.14	-18.86%	-5,398.43	-51.33%
>12" Catch Rate	0.28	0.31	0.03	10.71%	0.21	-0.07	-23.98%	-0.10	-31.34%
Stocked Area									
>14" Catch	2533.33	3503.19	969.86	38.28%	1131.19	-1,402.14	-55.35%	-2,372.00	67.71%
>14" Catch Rate	0.17	0.17	0.00	0.00%	0.08	-0.09	-50.51%	-0.09	-50.51%
14"-12" Catch	2108.07	3469.03	1360.96	64.56%	2083.23	-24.84	-1.18%	-1,385.80	-39.95%
14"-12" Catch Rate	0.14	0.16	0.02	14.29%	0.15	0.01	10.67%	-0.01	-3.16%
>12" Catch	4641.40	6972.22	2330.82	50.22%	3214.42	-1,426.98	-30.74%	-3,757.80	-53.90%
>12" Catch Rate	0.32	0.33	0.01	3.13%	0.24	-0.08	-25.29%	-0.09	-27.55%
Wild Area									
>14" Catch	368.61	1290.23	921.62	250.03%	446.66	78.05	21.17%	-843.57	-65.38%
>14" Catch Rate	0.05	0.10	0.05	100.00%	0.04	-0.01	-15.75%	-0.06	-57.87%
14"-12" Catch	1244.82	2254.90	1010.08	81.14%	1457.84	213.02	17.11%	-797.06	-35.35%
14"-12" Catch Rate	0.16	0.18	0.02	12.50%	0.14	-0.02	-14.06%	-0.04	-23.61%
>12" Catch	1613.43	3545.14	1931.71	119.73%	1904.50	291.07	18.04%	-1,640.64	-46.28%
>12" Catch Rate	0.21	0.28	0.07	33.33%	0.18	-0.03	-14.46%	-0.10	-35.85%

Table 9. Comparison of large trout estimated harvest from 2000, 2001, and 2004 Oatka creek creel survey results.

			2000-2001			2000-2004		2001-2004	
	2000	**2001**	Difference	%Change	**2004**	Difference	%Change	Difference	%Change
All Areas									
>14" Harvest	1610.64	1634.40	23.76	1.48%	358.59	-1,252.05	-77.74%	-1,275.81	-78.06%
>14" Harvest Rate	0.07	0.05	-0.02	-28.57%	0.01	-0.06	-78.70%	-0.04	-70.18%
14"-12" Harvest	898.31	1272.56	374.25	41.66%	893.22	-5.09	-0.57%	-379.34	-29.81%
14"-12" Harvest Rate	0.04	0.04	0.00	0.00%	0.04	-0.00	-7.14%	-0.00	-7.14%
>12" Harvest	2508.95	2906.95	398.00	15.86%	1251.81	-1,257.14	-50.11%	-1,655.14	-56.94%
>12" Harvest Rate	0.11	0.09	-0.02	-18.18%	0.05	-0.06	-52.68%	-0.04	-42.16%
Stocked Area									
>14" Harvest	1610.64	1625.06	14.42	0.90%	354.11	-1,256.53	-78.01%	-1,270.95	-78.21%
>14" Harvest Rate	0.11	0.08	-0.03	-27.27%	0.03	-0.08	-76.06%	-0.05	-67.08%
14"-12" Harvest	841.09	1268.51	427.42	50.82%	799.71	-41.38	-4.92%	-468.80	-36.96%
14"-12" Harvest Rate	0.06	0.06	0.00	0.00%	0.06	-0.00	-0.87%	-0.00	-0.87%
>12" Harvest	2451.72	2893.58	441.86	18.02%	1153.82	-1,297.90	-52.94%	-1,739.76	-60.12%
>12" Harvest Rate	0.17	0.14	-0.03	-17.65%	0.09	-0.08	-49.52%	-0.05	-38.70%
Wild Area									
>14" Harvest	0.00	9.33	9.33	-	4.48	4.48	-	-4.85	-52.00%
>14" Harvest Rate	0.00	0.001	0.00	-	0.0004	0.0004	-	-0.0003	-39.66%
14"-12" Harvest	57.22	4.04	-53.18	-92.94%	93.51	36.29	63.42%	89.47	2214.53%
14"-12" Harvest Rate	0.01	0.0003	-0.01	-97.00%	0.01	-0.00	-11.81%	0.01	2839.74%
>12" Harvest	57.22	13.37	-43.85	-76.63%	97.99	40.77	71.24%	84.62	632.87%
>12" Harvest Rate	0.01	0.001	-0.01	-89.00%	0.01	-0.001	-7.58%	0.01	740.14%

Table 10. Water year 2004 discharge in cubic feet per second for Oatka Creek (from Hornlein, et al. 2004).

04230500 OATKA CREEK AT GARBUTT, NY

LOCATION.--Lat 43°00'36", long 77°47'30", Monroe County, Hydrologic Unit 04130003, on right bank 40 ft downstream from bridge on Union Street in Garbutt, 1.5 mi west of Scottsville, and 4.2 mi upstream from mouth.

DRAINAGE AREA.--200 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 2112; WDR NY-82-3: Drainage area. WDR NY 1971: 1960(M). WDR NY 1993: 1991. WDR NY 1997: 1996 (P).

GAGE.--Water-stage recorder. Datum of gage is 560.86 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Telephone and satellite gage-height telemeters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,050 ft^3/s, Mar. 31, 1960, gage height, 8.64 ft; minimum discharge, 3.3 ft^3/s, Sept. 11, 12, 1958; minimum gage height, 1.88 ft, June 19, 1959, result of regulation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 7	0500	1,960	5.65	0121	1,770	5.47
Apr 3	2100	1,700	5.39	1936	*2,360	*6.18
Apr 15	1215	1,680	5.37			

Minimum discharge, 40 ft^3/s, Oct. 16, 17, gage height, 2.41 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	90	921	358	125	229	434	231	426	96	125	143
2	46	78	612	293	123	442	932	228	457	91	129	107
3	50	102	453	309	125	1,140	1,470	237	372	87	112	88
4	71	175	322	406	127	1,560	1,460	233	300	85	114	80
5	60	159	310	428	130	1,610	1,130	218	247	87	102	75
6	128	151	277	359	131	1,770	876	209	217	82	94	71
7	90	182	239	223	137	1,810	716	199	200	101	99	69
8	66	136	185	210	e150	1,120	622	217	183	132	90	98
9	57	112	211	e240	e160	761	521	253	172	148	85	1,270
10	52	96	208	e200	160	615	435	375	178	115	83	1,630
11	49	91	271	184	159	482	381	333	161	99	78	1,180
12	47	90	379	194	154	429	344	252	151	100	76	760
13	46	135	344	195	150	377	404	222	150	96	77	386
14	45	287	223	176	150	332	1,210	201	139	107	76	304
15	47	334	184	e170	e140	329	1,560	191	129	125	74	259
16	44	258	226	e160	e135	365	1,020	194	122	139	74	226
17	65	283	252	163	128	263	622	213	163	142	71	213
18	66	293	352	168	e128	279	523	185	197	154	68	298
19	56	300	342	163	132	284	737	175	243	129	71	447
20	49	689	290	158	132	308	665	239	167	117	72	450
21	47	725	240	152	142	466	472	251	144	123	68	280
22	50	656	244	152	164	573	428	329	132	109	65	210
23	49	372	284	e140	e180	591	426	508	126	100	64	178
24	48	248	508	141	e180	448	382	1,030	121	90	63	161
25	50	217	681	e135	e175	730	357	1,630	139	86	60	148
26	52	225	643	132	e165	950	332	1,630	128	84	57	144
27	54	209	497	132	e160	1,150	319	1,000	119	155	58	136
28	79	413	341	132	e150	977	299	698	111	309	61	129
29	132	1,100	299	130	e160	850	276	570	103	279	e72	123
30	110	1,170	303	127	---	589	250	703	98	170	e160	119
31	107	---	321	127	---	447	---	501	---	135	182	---
TOTAL	1,954	9,376	11,002	6,257	4,252	22,276	19,603	13,455	5,595	3,872	2,680	9,782
MEAN	63.0	313	355	202	147	719	653	434	186	125	86.5	326
MAX	132	1,170	921	428	180	1,810	1,560	1,630	457	309	182	1,630
MIN	42	78	184	127	123	229	250	175	98	82	57	69
CFSM	0.32	1.56	1.77	1.01	0.73	3.59	3.27	2.17	0.93	0.62	0.43	1.63
IN.	0.36	1.74	2.05	1.16	0.79	4.14	3.65	2.50	1.04	0.72	0.50	1.82

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2004, BY WATER YEAR (WY)

MEAN	75.4	138	219	235	296	548	503	254	139	77.4	58.5	64.3
MAX	400	567	798	881	868	1,048	1,069	581	760	355	294	748
(WY)	(1978)	(1986)	(1978)	(1998)	(1976)	(1956)	(1947)	(1984)	(1989)	(1998)	(1992)	(1977)
MIN	18.0	17.2	20.1	22.9	33.4	244	117	99.7	45.6	31.8	22.5	19.2
(WY)	(1966)	(1965)	(1961)	(1961)	(1958)	(1965)	(1946)	(1995)	(1949)	(1965)	(1965)	(1965)

Table 11. Water year 2001 discharge in cubic feet per second for Oatka Creek (from Hornlein, et al. 2002).

04230500 OATKA CREEK AT GARBUTT, NY

LOCATION.--Lat 43°00'36", long 77°47'30", Monroe County, Hydrologic Unit 04130003, on right bank 40 ft downstream from bridge on Union Street in Garbutt, 1.5 mi west of Scottsville, and 4.2 mi upstream from mouth.
DRAINAGE AREA.--200 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.
REVISED RECORDS.--WSP 2112; WDR NY-82-3: Drainage area. WRD NY 1971: 1960(M). WRD NY 1993: 1991. WRD NY 1997: 1996 (P).
GAGE.--Water-stage recorder. Datum of gage is 560.86 ft above sea level.
REMARKS.--Records good except those for estimated daily discharges, which are fair. Telephone gage-height telemeter and satellite gage-height and precipitation telemeter at station. Several measurements of water temperature were made during the year.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,050 ft^3/s, Mar. 31, 1960, gage height, 8.64 ft; minimum discharge, 3.3 ft^3/s, Sep. 11, 12, 1958; minimum gage height, 1.88 ft, June 19, 1959, result of regulation.
EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 9	0700	*2,780	*6.36	No other peak greater than base discharge.			

Minimum discharge, 20 ft^3/s, Sep. 17, 18, 19, 20, gage height, 2.16 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	60	114	96	458	260	454	142	107	51	35	26
2	90	59	104	91	448	233	444	136	102	50	34	24
3	81	58	81	90	365	228	444	129	103	50	34	23
4	77	58	69	89	265	194	508	123	102	49	33	23
5	76	57	e72	90	257	177	799	116	100	49	32	23
6	99	57	67	90	232	186	1080	111	97	48	31	23
7	200	56	67	92	207	e180	1690	107	89	48	31	22
8	192	56	67	93	192	e190	2220	105	82	48	31	22
9	149	55	67	93	229	185	2640	109	77	47	30	22
10	132	58	64	90	e1060	177	1840	108	72	45	29	21
11	112	59	69	88	e1300	176	1020	106	74	45	29	21
12	98	60	77	90	e1050	170	815	122	77	44	29	21
13	88	64	e78	89	629	202	652	149	77	44	29	22
14	81	61	e85	86	421	468	498	152	72	43	31	22
15	75	59	e100	89	428	568	404	123	70	42	29	22
16	73	58	114	99	e450	684	362	113	65	42	27	22
17	72	59	210	140	491	557	335	108	64	46	30	21
18	92	61	e350	152	290	411	319	104	59	43	27	21
19	88	74	e310	141	219	414	304	106	57	41	28	21
20	85	72	e280	e130	e260	410	274	112	56	41	29	21
21	81	68	e260	e110	e280	455	252	106	55	39	27	23
22	75	63	e200	108	222	589	244	105	62	39	26	22
23	71	59	e160	e105	215	761	238	261	81	38	26	22
24	68	56	132	106	188	974	228	402	104	38	25	25
25	67	59	e120	e100	228	825	201	485	82	37	25	38
26	66	75	e110	97	487	602	185	243	72	40	24	26
27	66	108	e105	96	493	457	175	171	63	37	26	27
28	66	209	e100	95	345	419	167	153	57	36	27	32
29	64	172	e100	90	---	396	156	151	53	36	25	27
30	63	133	e100	105	---	426	148	145	51	37	24	25
31	61	---	100	295	---	471	---	124	---	36	24	---
TOTAL	2810	2203	3932	3325	11709	12445	19096	4727	2282	1329	887	710
MEAN	90.6	73.4	127	107	418	401	637	152	76.1	42.9	28.6	23.7
MAX	200	209	350	295	1300	974	2640	485	107	51	35	38
MIN	61	55	64	86	188	170	148	104	51	36	24	21
CFSM	.45	.37	.63	.54	2.09	2.01	3.18	.76	.38	.21	.14	.12
IN.	.52	.41	.73	.62	2.18	2.31	3.55	.88	.42	.25	.16	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2001, BY WATER YEAR (WY)

MEAN	77.3	139	220	237	298	545	504	247	134	76.8	57.8	60.5
MAX	400	567	798	881	868	1048	1069	581	760	355	294	748
(WY)	1978	1986	1978	1998	1976	1956	1947	1984	1989	1998	1992	1977
MIN	18.0	17.2	20.1	22.9	33.4	244	117	99.7	45.6	31.8	22.5	19.2
(WY)	1966	1965	1961	1961	1958	1965	1946	1995	1949	1965	1965	1965

e Estimated

Table 12. Water year 2000 discharge in cubic feet per second for Oatka Creek (from Hornlein, et al. 2001).

04230500 OATKA CREEK AT GARBUTT, NY

LOCATION.--Lat 43°00'36", long 77°47'30", Monroe County, Hydrologic Unit 04130003, on right bank 40 ft downstream from bridge on Union Street in Garbutt, 1.5 mi west of Scottsville, and 4.2 mi upstream from mouth.
DRAINAGE AREA.--200 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.
REVISED RECORDS.--WSP 2112: WDR NY-82-3: Drainage area. WRD NY 1971: 1960(M). WRD NY 1993: 1991. WRD NY 1997: 1996 (P).
GAGE.--Water-stage recorder. Datum of gage is 560.86 ft above sea level.
REMARKS.--Records good except those for estimated daily discharges, which are fair. Telephone gage-height telemeter and satellite gage-height and precipitation telemeter at station. Several measurements of water temperature were made during the year.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,050 ft^3/s, Mar. 31, 1960, gage height, 8.64 ft; minimum discharge, 3.3 ft^3/s, Sep. 11, 12, 1958; minimum gage height, 1.88 ft, June 19, 1959, result of regulation.
EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 26	2145	*2,310	*6.01	No other peak greater than base discharge.			

Minimum discharge, 22 ft^3/s, Oct. 3, gage height, 2.22 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	25	56	73	66	605	183	237	127	88	91	51
2	23	30	49	76	66	428	170	244	120	84	118	52
3	22	34	44	119	67	381	170	277	119	82	142	52
4	28	28	42	361	67	339	399	253	121	84	124	79
5	26	44	42	512	67	332	549	228	112	78	144	80
6	25	50	43	588	66	325	584	221	117	76	98	60
7	25	44	43	375	65	308	401	213	149	74	86	56
8	24	39	43	201	63	273	580	211	156	71	180	51
9	24	34	43	156	65	266	1300	205	126	70	139	53
10	25	31	43	148	64	310	1330	207	127	68	94	51
11	24	30	43	171	73	364	784	219	177	67	79	152
12	24	29	43	230	e75	311	528	369	138	65	74	103
13	25	41	53	206	e80	270	504	1220	253	64	95	78
14	33	42	49	e110	84	276	454	856	459	65	101	97
15	28	36	55	102	80	384	379	595	384	66	87	96
16	26	33	89	e140	78	413	330	360	313	66	72	75
17	26	32	212	e110	77	402	297	284	229	68	69	96
18	29	30	182	e98	77	389	290	267	178	117	64	78
19	29	29	105	94	76	342	288	288	151	95	60	65
20	27	29	98	99	74	407	308	400	141	77	55	59
21	27	29	154	e95	74	416	539	400	129	71	54	58
22	27	28	241	e90	74	346	768	333	118	67	52	54
23	27	28	152	e85	e90	300	961	281	115	63	60	86
24	27	29	89	85	e340	267	829	258	105	60	60	275
25	27	28	76	80	e880	245	635	274	99	59	58	467
26	26	37	89	79	1960	226	426	304	94	58	62	554
27	26	42	79	e75	1750	210	347	241	e100	57	56	265
28	27	164	e68	e85	1200	192	310	192	103	56	53	145
29	26	118	67	e74	854	186	284	170	114	55	52	140
30	25	72	68	e68	---	196	260	152	98	55	51	127
31	25	---	69	67	---	203	---	139	---	88	51	---
TOTAL	806	1265	2529	4852	8652	9912	15187	9898	4772	2214	2581	3655
MEAN	26.0	42.2	81.6	157	298	320	506	319	159	71.4	83.3	122
MAX	33	164	241	588	1960	605	1330	1220	459	117	180	554
MIN	22	25	42	67	63	186	170	139	94	55	51	51
CFSM	.13	.21	.41	.78	1.49	1.60	2.53	1.60	.80	.36	.42	.61
IN.	.15	.24	.47	.90	1.61	1.84	2.82	1.84	.89	.41	.48	.68

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2000, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	77.1	140	222	240	296	548	501	248	135	77.4	58.3	61.2
MAX	400	567	798	881	868	1048	1069	581	760	355	294	748
(WY)	1978	1986	1978	1998	1976	1956	1947	1984	1989	1998	1992	1977
MIN	18.0	17.2	20.1	22.9	33.4	244	117	99.7	45.6	31.8	22.5	19.2
(WY)	1966	1965	1961	1961	1958	1965	1946	1995	1949	1965	1965	1965

e Estimated

Table 13. Summary of early season estimated two-year-old brown trout harvest from Oatka Creek.

2004

Date	Daily Effort (Ang hrs)	Daily Catch (#)	Daily Harvest (#)	Daily 2Y BT Harvest Rate (Fish/hour)	Daily 2Y BT Harvest (#)	2Y BT Portion of Harvest (%)	2Y BT Stocked (#)	Portion of Stocked 2Y BT Harvested (%)		Portion of Anglers interviewed that creeled limit (%)
03/26/04	434.0	569.22	165.75	0.32	138.27	83.42%	1,050	13.17%		18.00%
03/27/04	224.0	480.70	121.34	0.43	96.55	79.58%		9.20%		28.00%
04/01/04	700.0	534.60	165.85	0.11	77.47	46.71%		7.38%	29.74%	11.32%
05/03/04							530			
05/05/04	112.5	409.01	61.54	0.26	29.48	47.91%		5.56%		0.00%
05/06/04	315.0	447.28	0.00	0.00	0.00	0.00%		0.00%	5.56%	0.00%
05/14/05	97.5	389.91	33.68	0.13	12.24	36.34%	520	2.35%		0.00%
05/15/04	232.5	669.64	92.14	0.22	51.84	56.26%		9.97%		8.57%
05/16/04	285.0	696.21	52.10	0.09	26.63	51.12%		5.12%		3.57%
05/17/04	187.5	446.18	92.95	0.08	15.62	16.81%		3.00%	20.45%	2.78%
06/09/05							250			
06/11/04	72.0	194.72	14.77	0.05	3.72	25.19%		1.49%		0.00%
06/12/04	112.0	239.00	37.73	0.12	13.47	35.71%		5.39%		8.00%
06/13/04	72.0	78.95	7.14	0.03	2.47	34.58%		0.99%	7.86%	0.00%

2001

Date	Daily Effort (Angler hours)	Daily Catch (#)	Daily Harvest (#)	Daily 2Y BT Harvest Rate (Fish/hour)	Daily 2Y BT Harvest (#)	2Y BT Portion of Harvest (%)	2Y BT Stocked (#)	Portion of Stocked 2Y BT Harvested (%)		Portion of Anglers interviewed that creeled limit (%)
03/30/01	651.00	1670.30	547.70	0.43	278.58	50.86%	750	37.14%		0.00%
03/31/01	686.00	887.77	300.77	0.13	90.76	30.18%		12.10%		1.64%
04/01/01	1022.00	377.48	172.20	0.04	45.17	26.23%		6.02%	55.27%	2.33%
04/19/01	56.00	82.29	6.29	0.04	2.29	36.36%	220	1.04%		0.00%
04/21/01	378.00	407.57	85.63	0.21	79.57	92.92%		36.17%	45.05%	0.00%
04/27/01	175.00	182.26	70.62	0.30	53.29	75.46%	600	8.88%		0.00%
04/28/01	294.00	443.11	57.66	0.09	27.12	47.04%		4.52%	13.40%	0.00%
05/15/01							350			
05/17/01	165.00	241.68	55.00	0.13	22.00	40.00%		6.29%		0.00%
05/18/01							0			
05/19/01	285.00	834.21	235.24	0.28	80.75	34.33%		23.07%		0.00%
05/20/01	367.50	235.59	9.67	0.03	9.67	100.00%		2.76%	32.12%	0.00%

Bold indicates scheduled stocking date. Italics indicates unscheduled or surplus stocking.

Table 13 (Continued).

05/25/01	30.00	0.00	0.00	0.00	0.00	0.00%	220	0.00%		0.00%
05/26/01	217.50	674.27	117.91	0.21	46.27	39.24%		21.03%	21.03%	3.45%
06/12/01							190	0.00%		
06/13/01	248.00	543.94	29.88	0.11	27.52	92.10%		14.48%		0.00%
06/14/01	72.00	81.21	40.16	0.22	15.52	38.64%		8.17%	22.65%	0.00%

2000

Date	Daily Effort (Angler hours)	Daily Catch (#)	Daily Harvest (#)	Daily 2Y BT Harvest Rate (Fish/hour)	Daily 2Y BT Harvest (#)	2Y BT Portion of Harvest (%)	2Y BT Stocked (#)	Portion of Stocked 2Y BT Harvested (%)		Portion of Anglers interviewed that creeled limit (%)
03/27/00	651.00	2860.92	1244.28	1.61	1047.42	84.18%	1330	78.75%		28.57%
03/28/00	140.00	535.28	167.27	0.96	134.65	80.50%		10.12%		7.14%
04/01/00	1155.00	414.09	118.69	0.08	95.38	80.36%		7.17%		0.00%
04/02/00	574.00	326.00	127.46	0.19	110.90	87.01%		8.34%	104.39%	0.00%
05/05/00	480.00	1029.53	266.45	0.32	155.57	58.38%	660	23.57%		2.44%
05/06/00	232.50	85.67	6.92	0.01	2.45	35.37%		0.37%	23.94%	0.00%
06/08/00							60			
06/09/00	152.00	327.29	1.61	0.00	0.00	0.00%		0.00%		0.00%

Bold indicates scheduled stocking date. Italics indicates unscheduled or surplus stocking.